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INDEX TO SUBJECTS

[Figures with an asterisk indicate original articles. Figures without an asterisk indicate abstracts, reviews, critical digests and correspondence. The names of the authors are given in parenthesis.]

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ON CERTAIN CENESTHETIC DISTURBANCES

WITH PARTICULAR REFERENCE TO CEREBRAL CENESTHETIC DISTURBANCES AS PRIMARY MANIFESTATIONS OF A MODIFICATION OF THE PERSONALITY

BY DR. PAUL SOLLIER

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CEREBRAL cenesthesia, the reality and importance of which in the mechanism of the emotions[1] I have endeavored to show, is still contested and rejected by the majority of authors. Notwithstanding this the facts which militate in its favor are sufficiently numerous to impel me to call attention to certain ones which are observable in the great majority of cases at the onset or, at times, at the moment of disappearance of more or less profound troubles of the personality. It is almost fifteen years since I first observed them. They consist in general in quite a sudden sensation of shock, of cerebral cataclysm. Certain patients compare it to an explosion in the brain, or it seems to them as if the brain turned upon itself; others describe it as a cracking or bursting sensation, after which they feel themselves transformed, changed; and the outside world appears to them in another aspect, giving them a different impression.

These sensations provoke in the victim a profound astonishment, a sort of stupefaction and not seldom an extreme anxiety. It seems to him as though everything were escaping from him, vanishing, and that he can't even hold onto himself.

The first case of the sort observed by me was that of a man about fifty years of age who experienced a sudden shock in the head, which came upon him in the wake of a considerable intellectual and moral over-tire in business,

*Translation by Dr. J. W. Courtney, membre correspondant étranger de la Société de neurologie de Paris.

[1] Le mécanisme des emotions. Paris, chez F. Alcan, 1905.

and while he was still actively engrossesd in affairs. He was at his club, engaged in watching a game of billiards. Suddenly it seemed to him as if his brain turned upon itself, and immediately he fell into a condition of aboulia, apathy and sadness, which suggested melancholia. He remained for a certain length of time, for several weeks in fact, in this state, and then suddenly experienced the same shock, after which he developed an opposite condition of extreme mental hyperactivity that was quite like that of a case of circular insanity or even, in certain repects, like that of a recent case of dementia paralytica. The hyperexcitation also lasted a certain length of time, then gradually diminished and finally disappeared. This circular form of attack recurred several years later, and the depressed phase made its début in identical fashion, with the sensation as of the brain turning upon itself; but the transition to the period of hyperexcitation developed more gradually, and this period betrayed an intensity and a persistence which at times aroused a fear that the case in hand was one of dementia paralytica. However, everything quieted down at the end of a year or thereabout, and for more than twelve years now this man has pursued his occupation uninterruptedly in a perfectly normal fashion.

Another case was that of a woman forty years of age, who had previously had an attack of melancholia lasting fifteen months. For three years she had been subject to vertiginous spells to which she paid no attention. She grew weary of everything, shunned society and isolated herself as much as possible. One day as she was about to enter a store in town to do some shopping for a dinner-party she had to give, she suddenly became completely unable to remember what she had planned to purchase. From this moment on her melancholy increased; she became indifferent to life and even evinced a disgust for it. Finally, one day while in church, she felt a great bursting in her head. Directly a veil descended over everything and, as she expressed it: "I no longer felt the same; I was completely changed; I no longer saw anything in the old way; I no longer felt anything; now I am indifferent to everything; I no longer see clearly; I heed nothing, not even

the passage of time; I take no note of the seasons, of the weather; everything is gray to me; the flowers, the sun, give me no pleasure; I can no longer sleep."

This woman was no longer able to work, and spent her time twisting a lock of hair on the top of her head. She ended by pulling her hair all out. Her power of representation was annihilated. She could no longer form a mental picture of her home, her husband or her children. When she tried to picture herself as she used to be, she was unsuccessful. Her mental vision was completely abolished. At present her pain sense is singularly dulled, and when she is pricked she says the effect upon her is as if it were being done to another person, although her tactile sense is preserved.

I have observed the same phenomenon in still another case, that of a man who presented extremely marked disturbances of the personality, which were especially characterized by a complete dissociation of feeling and cognizance. He was an unmarried man of about thirty years, an onanist in his youth, and with a touch of mysticism in his make-up. He was very intelligent withal, had pursued his studies with brilliancy and held an important position in the administration of foreign political affairs. While studying law he was subject to frequent headaches and stomach troubles, and every spring, for a period of three weeks, he was attacked in the same way and was unable to apply himself to any form of intellectual work. One day he had one of his accustomed stomach attacks associated with considerable anxiety, and was in despair. The following night he suddenly awoke with a feeling as if the circulation were impeded in his brain at a point which he designated with great precision, and which corresponded to that which I have already indicated at the level of the left parietal lobe, as the stomach center. He thought he was going to have an attack of cerebral congestion, and passed the entire night in terror. He felt almost dead, sat up and applied himself "to pushing upon his brain to get back his feeling." It was precisely from this moment that he felt himself indifferent to everything, and at the same time he continued to have his stomach troubles. He became analgesic, with preservation of tactile

sensibility except over the stomach and abdomen. He cannot distinguish what hurts from what does not. He cannot get interested in anything, is afraid of everything, and declares himself a living corpse. He is neither sad nor gay; "he is nothing, nothing matters to him." His muscular as well as his stereognostic sense is preserved. "I am cognizant of it," he says, "but have no feeling." For two years he has continued to ask himself what has come over him, whether he is really ill or not, whether he is alive or dead. "I am fully aware that I exist," he keeps saying, "but I am not really alive. I can't say that I do not live, that I am not living, but I have to reason with myself to say it, for I do not feel that I am alive. I keep asking myself if I am on earth, in purgatory or in heaven. By a process of reasoning I say to myself that I must be on earth, but I know nothing about it of my own knowledge; I do not really feel it." It seems to him that there is no such thing as time, and yet time seems to him interminably long. "I suddenly fell into darkness and nothing has ever withdrawn me from it." One day the situation became aggravated, the stomach being the point of departure. He felt "a horror start from the abdomen, like a whirlwind, and ascend to the region of the chest." This state which, apart from the interruptions for treatment made necessary by the paroxysms, permitted him to continue his occupations, has scarcely varied in ten years.

One finds in the "Confessions" of Jean Jacques Rousseau the description of analogous phenomena followed, as in the preceding cases, by profound disturbances of the personality and of the feeling of life. It appears that commentators who have tried to work out the psychopathologic status of this writer have overlooked a passage which in reality is markedly characteristic. The passage to which I have reference is in certain aspects very much like the case just reported (Part I, Book VI, 1736): "One morning when I was no more ill than usual, I felt, on putting a little table upon its base, a sudden (and almost inconceivable) revolution in my whole body. I cannot better compare it than to a sort of tempest which arose in my blood and immediately took possession of all my limbs. My arteries began to

throb with such force that I not only felt their beating but could even hear it, particularly that of the carotids. Added to this was a tremendous noise in the ears, and this noise was three- or, rather, four-fold, —that is to say: a buzzing somber and dull, a clearer murmur like that of running water, a very piercing whistling, and the beating just mentioned, whose strokes I could easily count without touching my body with my hands. This internal noise was so great that it robbed me of my wonted sharpness of hearing and left me not deaf but hard of hearing, an infirmity I have since retained.

One may judge of my astonishment and terror; I thought I was dead; I went to bed, the doctor was called; trembling I told him my case, believing it to be irremediable. I've no doubt he thought the same, but he did his duty. He entered upon a long dissertation, of which I understood nothing whatsoever; then, in consequence of his sublime theory, he began *in anima vili* the experimental treatment it pleased him to try. It was so painful, so disgusting and of so little avail, that I soon tired of it, and, at the end of several weeks, seeing that I was neither better nor worse, I left my bed and resumed my ordinary life, with my beating arteries and buzzings, which from that time to the present, a matter of thirty years, have never given me a moment's respite. Up to that time I had been a great sleeper. The absolute insomnia which combined with all these symptoms, and has constantly accompanied them to the present time, settled my conviction that I had little time left to live. This conviction freed me for a time from the uneasiness caused by uncertainty. Unable to prolong my life, I determined to make the most of what little remained to me, and that was made possible through a singular favor of nature, which, in my sorry state, granted me exemption from ills that seemed inevitable. I was annoyed by this noise, but it was not really painful; it was accompanied by no other constant incommodity than insomnia at night, and an habitual dyspnea which did not amount to a true asthma and which made itself felt only when I attempted to run or make unwonted exertions. This misfortune, which might have destroyed my body, annihilated only my passions;

and I blessed heaven daily for the happy effect it produced upon my soul. I can truly say that I did not begin to live until I regarded myself as a dead man."

It is true that in the case of Jean Jacques Rousseau the cerebral cenesthetic phenomena are less clear-cut than in the others. Nevertheless, the abruptness, the intensity and persistence of the cononditi which followed this "tempest" of his entire being, including his head and, in particular, the auditory apparatus, are noteworthy. At the same time there took place in him a profound change in his feelings, a sort of moral analgesia that ran parallel with a greater acuity of abstract discernment. The terror experienced by him at the moment the trouble arose is found in all the other cases. It seems very probable, therefore, in these various observed cases, of which I might cite others less characteristic, that we are dealing with a symptomatic ensemble of a markedly special stamp and with an evolution that is in itself peculiar.

The onset is sudden; often after prodromes in the form of digestive disturbances, it is a sensation of complete disorder of the brain and at times of the entire being, which throws the patient into a panic of anxiety or fright. His cenesthetic feeling changes immediately. While his intelligence remains absolutely unclouded, and the purely brute cognition persists, there arises an incapacity to take in the outside world, to feel those impressions which enable him to differentiate himself from it; and it is an obsessing or at least a continual seeking after the old *ego*, the old feeling of the reality of life. The modifications of the personality are, then, manifestly connected with the sudden sensation felt in the brain.

To what does this sensation correspond? It is difficult to establish an hypothesis upon a verifiable base. For my part I do not believe it can be attributed to peripheral modifications of muscles or of the circulation. Patients locate their sensations deeply in the brain, but that does not offer any adequate explanation. One may advance the hypothesis of disturbed cerebral circulation, but how may one determine by what influence it is brought about?

In any case, if there really is a circulatory disturbance, it is not the whole cause. It is not logical to suppose that

such a disturbance, transitory, purely physiologic, causing no destructive lesion, could be followed by phenomena so enduring, permanent even, as those we see arise in these cases.

If in the wake of such a sudden and, for the patient, such a terrifying disturbance of the circulation, persistent manifestations are established, it seems to me extremely probable that there is a functional change in the cerebral cortex. This, as we know from other examples, may persist, at times indefinitely, without any organic lesion discoverable by our methods of investigation. From this moment on the cerebral cenesthesia is modified, and the change immediately felt by the subject in his personal feeling and affective tonality persists without modification. A permanent change in cortical activity is, in my opinion, alone capable of elucidating this fact, and one might query if it be not the cortical disturbance which causes the circulatory perturbation and not *vice versa*. For my part I am strongly inclined to such interpretation of the order of the phenomena.

Whatever pathogeny one may adopt, the situation is none the less this: on the one hand certain very definite disturbances of the personality, of markedly autonomous evolution, suddenly spring into existence, accompanied by feelings of profound perturbation of the brain; and on the other hand the fact that the patient is cognizant of the localization and cerebral origin of these sensations shows conclusively that cerebral cenesthesia exists.

I do not wish at this time to enter upon a discussion of this question of cerebral cenesthesia. I wish only to add that sensations analogous to those which I have pointed out in the preceding cases are likewise observed in hysterics in whom one endeavors to bring about a cerebral awakening, to emancipate them from their vigilambulism,— their fundamental state,— according to the procedures I have elsewhere indicated.[1] The sole difference is that it is the restoration of the personality of the patient which is accompanied by these peculiar and special sensations. I would recall here the sensory reactions which are produced when the brain itself comes out of the benumbed state in which

[1] Vid. Genèse et Nature de l'Hystérie, 2 vol. in 8°, F. Alcan, Paris, 1897; and L'Hystérie et son traitement, 1 vol., F. Alcan, 1902.

it is plunged and which constitutes hysteria. We get various complaints of disordered feelings, such as jolting, hammer blows, stretchings, crackings, strings breaking, of bursting and fireworks, which end in a clarification of the ideas and a complete feeling of the *ego*, but which are accompanied by a confusion of ideas, a loss of the notion of time, fear of going mad and a regression of memories. (These sensations of cerebral cataclysm are also encountered in a spontaneous fashion in cases of hysterical amnesia, when the memory returns suddenly instead of progressively. Patients in these cases ordinarily complain of very violent pains in the forehead, in the anterior part of the cranium, as if their heads were going to burst; and after each violent, agonizing pain, a series of memories reappear.)

Here again, as in many other cases, the study of hysteria aids us to understand, to reproduce, and control what occurs in other cases not hysterical. The fact is, as I have elsewhere tried to show, hysteria is not, properly speaking, a disease. It is a state which differs from physiologic states that may be encountered in the normal individual, only by its intensity and especially by its permanence, its fixity. The conception I have given of its physiologic nature consequently more than covers the ground of hysteria, properly so-called, from a clinical standpoint. It has a general range which allows us to interpret a large number of psychophysiologic disturbances, and, in many cases, even to reproduce them or show their mechanism and their real position in the hierarchy of the phenomena of psychologic activity of the brain.

In this paper my only desire has been to call attention to these phenomena of cerebral cenesthesia; but the psychophysiologic state whose début they mark constitutes a special category in the sphere of the cerebral and psychopathologic nosography into which we have had a glimpse for some time, but which deserves profound study, for it is of the highest importance from the point of view of the study of the personality in general, of the relations between feeling and cognizance, and of the rôle of the affective tone in the phenomena of representation, all questions whose elucidation is of such importance to general psychology.

MORBID SLEEPINESS

WITH A REPORT OF A CASE OF NARCOLEPSY AND A REVIEW OF SOME RECENT THEORIES OF SLEEP

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MORBID sleepiness occurs in two forms, a continuous drowsiness or sleepiness extending over a prolonged period of time and of various degrees of intensity; and attacks of sleep which vary in depth from mere drowsiness to complete unconsciousness and in duration from a few minutes to many hours. The continuous form is by far the more common, and for it many causes are assigned: — old age, weakened heart and diseased arteries; diseased vascular conditions preceding cerebral hemorrhage, cerebral malnutrition or inflammation occurring during or before certain forms of insanity: various toxemias, malarial, cholemic, uremic. syphilitic, dyspeptic and diabetic; isolation; cerebral anemia and hyperemia; cerebral tumor and cranial in juries; exhausting diseases, and African sleeping sickness. The above list given by Dana contains certain obvious duplications, but cases are common in which sleepiness, so called, is a symptom of each of these conditions; this sleepiness, however is, in most of the cases, a condition of stupor or coma which obviously differs from true sleep. Skerrit and Stewart report the case of a youth seventeen years old who after a period of hard study and insufficient sleep, slept for fifty days. Marduel reports a case of prolonged sleep associated with a great increase in the excretion of urea. Hysteria, hypnotism, or auto-suggestion is the cause of prolonged sleep in some cases, though in many of these there are demonstrable differences between the lethargic or trance state and normal sleep. Such cases are reported by Blondet, Hayman, John Gay, James Edwards, Drosdow, and others. In this connection there should be noticed the case reported by W. T. Gairdner: A woman thirty-two years old who four weeks after the birth of her child fell into a trance lasting

twenty-one months. She had to be fed with a stomach tube, passed her urine and feces in bed, and cayenne pepper blown up her nose produced no results. She was suddenly cured without therapeusis and the sequel showed it to have been a case of "motiveless malingering."

Of more interest because more rare are those cases of the second form to which I have referred, those in which the sleepiness comes on in periodical attacks. They may be a symptom of many of the conditions which are given as the cause of the continuous drowsiness; they may be symptomatic of anemia (Ward Cousins), or auto-intoxication (Caton); they may occur in association with affections of the liver (Leopold Levi), or be caused by a sarcoma at the base of the brain in the interpeduncular space (Francesco Franceschi); they may be symptomatic of neurasthenia (Oppenheim); and they are not rarely the equivalent of an epileptic attack. In 1880 Gélineau proposed the name "Narcolepsy" for "a rare neurosis characterized by an imperious sleep of sudden onset and short duration which recurred at more or less frequent intervals." The name, derived from the Greek, was suggested because the condition combined the features of somnolence and catalepsy, but Foot objects that "*νάρκη*" implies stiffness, numbness or deadness, and therefore is not descriptive of the actual condition in these cases in which there is simply the quiescence of sleep and suggests, instead "Hypnolepsy," from the Greek *Ὕπνος*, meaning sleep. It was not a symptom of any bodily disorder, and Gélineau was decidedly of the opinion that the condition to which he gave the name narcolepsy was not epileptic in its nature or origin, but the name has been indiscriminately used to indicate both the symptomatic and epileptic forms of stupor attacks, which is unjustifiable, as there are symptoms which enable a distinction to be made.

The case which I have to report corresponds to the description by Gélineau of a case of narcolepsy. The patient attended the service of Dr. Wm. G. Spiller at the Polyclinic Hospital in September, 1905.

J. R. G. is a slate quarrier, forty-one years old and married. His father was killed by an accident, but his mother is living and well. There is no history of epilepsy

or any other nervous disease in the family. One brother and one sister are living and in good health; five others died in infancy or early youth. The patient had scarlet fever when a child and typhoid fever when about twenty-one years old; since then he has been well until his present illness. He has been married twenty-two years; his wife is well, has had four children and no miscarriages; two of the children are living and well; one died of convulsions when two years of age, another died of diptheria when ten years of age. The patient drinks one glass of beer daily but no whisky and uses tobacco chiefly by chewing.

He was entirely well so far as he knew until the morning of August 25, 1904, when while walking in the street he felt a slight twitching in the legs and they "gave way." On the same day he attended a political convention and while there fell asleep. After sleeping about five minutes he was awakened by a friend but soon afterward fell asleep again; he was reawakened and then went home. Ever since then, until his examination in September, 1905, he has had these attacks of sleepiness coming on at irregular intervals many times a day and persisting until he is awakened by some slight stimulation, such as a spoken word or a slight touch. The attacks bore no relation to taking food, and occurred often in the most inconvenient or perilous places, such as while talking, while being examined in the hospital, while eating, when working in the quarry, ascending ladders, etc. The attacks were preceded by a feeling of depression and fatigue. For a few days after the onset of his illness he had a severe diarrhoea which he attributed to "catching cold." He said that he had become more excitable and irritable and that when excited or angry or even when joking he had involuntary, general, incoördinate movements, would drop objects held in his hands, and his legs would be liable to "give way" under him but he would not fall. When walking and he felt sleepy he would also feel great fatigue in his legs, but if he slept for five minutes this feeling would have left him when he woke. He slept a normal amount at night but dreamed frequently. The dreams were usually of an unpleasant nature; "a woman reaches over and grabs me by the throat but I cannot move," that he was in an asylum

for the self-polluted, etc. He seemed to have a vivid memory of his dreams. He had no hallucinations of sight, but sometimes "imagined people spoke to him when they did not." He was absent-minded, his memory poor for recent events, but he can usually recollect after an effort. He felt well when he arose in the morning and not tired or melancholy. He had no headaches, no indigestion nor any other symptom or complaint. His appetite was good and his bowels moved daily.

Examination showed him to be a well-nourished, muscular man with the appearance of perfect health. He answered questions quickly and intelligently. Several times during the examination, which was conducted in the presence of a number of students, he fell into what was, to all appearances, a sound and peaceful sleep, but from which he could be quickly and easily awakened. His pulse was regular, the rate and tension normal. Examination of his chest and abdomen was negative. His gait and station were normal and there was no paralysis or ataxia of the face or limbs. The tendon reflexes of the upper and lower extremities were prompt and normal on each side; there was no ankle clonus or Babinski reflex. His tongue was clean and there was no tremor or atrophy. Sensation to touch and pin-point was normal all over the body. The palate was equally sensitive on each side and the conjunctival and skin reflexes were normal. The sense of smell seemed slightly more acute in the right nostril. The sense of taste was normal and equal on each side of the tongue. No areas of tenderness or hysterogenous zones could be detected. An eye examination made by Dr. Hansell was negative; the fundus oculi, the pupillary reflexes and the visual form and color fields being normal. The urine contained no albumen or sugar. A blood examination was not made, but the conjunctiva and mucuos membranes were of good color.

To summarize:— a strong, somatically healthy, laboring man forty-one years old suddenly begins having attacks of sleep many times a day, evidently involuntary but unaccompanied by any of the physical signs of illness, even the stigmata of hysteria being absent. There is a slight mental change, the heightened irritability being perhaps not unnatu-

ral under the circumstances. His natural sleeping period is undisturbed except by particularly vivid and unpleasant dreams.

The administration of caffeine was of no use in keeping him awake, and his principal treatment consisted in the application of static sparks to his head wifh suggestion. This with general hygienic treatment and the change of scene and occupation appeared to be of benefit as in a week's time the number of attacks daily was considerably diminished.

Gélineau quotes Caffe as being the first to report a case of this description. These cases must be distinguished from epileptic pseudo-narcolepsy and from hysterical pseudo-narcolepsy; the differential diagnosis will be referred to later. Genuine cases of narcolepsy are not common in the literature. MacNamara, in 1862, published the case of a girl, fifteen years old, who was attacked with severe pain in the head which was worse when she was in the recumbent position. At the same time she began having sudden attacks of sleep while eating, at the piano, coming down stairs, etc., from which she could be awakened at the slighest touch. She was entirely cured by a severe epistaxis. E. Mendel reported a case in a man, aged thirty-seven years, who also had migrainous attacks, and the author thought that both were due to an affection of the sympathetic nervous system leading to cerebral anemia. Matas coincides with this view of the affection. Morton reported a case in a physician, thirty-two years old, who went to sleep on the slightest mental exertion, such as reading, while making a vaginal examination, three times during the writing of a prescription, etc. He was utterly unable, when taken off his guard, to control his temper, and he had such a dread of mental exercise that he would put off settling a question, even of a trivial nature, rather than think about it. Legrand reported a case in a girl, aged sixteen vears, who also had a facial tic. The attacks of sleep only lasted from twenty to sixty seconds and the awakening was spontaneous with a profound inspiration. Jacoby reported a case in a barber who had no other symptoms except that he was gaining fast in weight. Franz Fischer reported a similar case as epileptoid, though the

details given are against such a diagnosis; a single woman, twenty-two years old, would suddenly fall asleep from two to six times daily whether at work or idle; just before falling asleep she would feel very tired, but whether the sleep lasted five minutes or an hour she awoke feeling refreshed and was immediately able to continue her work; she had insomnia and unpleasant dreams, but all of her bodily functions were normal, and treatment by strong galvanism to the head greatly alleviated her condition. Foot reported a case in a patient, eighteen years old, of neurotic heredity who went to sleep every day at three p.m. no matter what he was doing. The attacks came on gradually but he was powerless to resist them. There was no convulsion or spasm, and the author does not regard the condition as epileptic. In this case the inhalation of amyl nitrite, or the administration of picrotoxin or caffeine were of no benefit. Ewen reported a case in a soldier, twenty-four years old, who was arrested for sleeping on guard duty. He often slept through roll-call and had been frequently punished for it. On one occasion he was found asleep on a ladder fifteen feet from the ground, at another time, at a meal, with a soup-spoon in his mouth. He appeared to be unconscious of the fact that he had been asleep or that he slept more than other men. There were no signs of epilepsy, h ysteria, or cretinism. Chavigny reported an almost identical case also in a soldier; the only somatic disturbance being a slow pulse, forty to fifty per minute. In a case reported by MacCormac the apparent exciting cause of he condition was the extraction of ten teeth without an anesthetic. The attacks would last from three to ten minutes or longer and the patient would have twelve or more daily. She was entirely unable to prevent their onset and they came on under the most varied circumstances, though she was easily awakened. She was treated with phosphate of iron, quinine sulph., tinct. nux vomica and nitro-glycerine, also galvanism to the head, a weak current, three minutes at a time, three or four times weekly. She was cured,but the condition recurred as a result of worry. Dana, D. J. McCarthy and recently Friedmann have reported similar cases but also include as narcolepsy cases of a *petit mal* and hysterical somnolence.

Cases of hysterical sleep attacks are numerous in the literature, and are referred to by Armaingaud, Legrand, Achard, Gilles de la Tourette, Pitres, P. Richer, Charcot, Parmentier, and others. Camuset's patient had a dracocystitis and every time a sound was passed up his lachrymal duct he went into a sleep lasting from six minutes to an half hour from which he awakened perfectly normal; any emotion provoked an attack. Gilles de la Tourette regarded the sleep attacks which occur in the early stages of paresis as due to a superimposed hysterical state, and inasmuch as the hysteria tends to disappear in the course of the disease it explains the frequency of the attacks in the earlier stages. Cases of hysterical pseudo-narcolepsy can be fairly easily diagnosed clinically by certain features of the attacks themselves, such as the vibratory movements of the eyelids, a certain stiffness of the extremities, position of the body, etc.; also by the cause of the attacks, suggestion, and the mode of onset. They are in reality hysterical trance states and present at least some of the well-known features of this neurosis; the presence of the stigmata of hysteria, sensory changes, hysterogenous zones, etc., will confirm the diagnosis.

The sudden unconsciousness of attacks of *petit mal* are too well-known to need extended notice here. Ch. Féré has called attention to attacks of somnolence occurring in epileptics, and at times replacing the epileptic attacks, which are characterized by suddeness of onset and complete unconsciousness from which the patient cannot be awakened though he may be, in appearance, only asleep. In another place the same author calls attention to attacks of "epileptic apathy" differing from post-epileptic depression, and resembling attacks of bromism, from which it is important to distinguish them. This may be done by the absence of gastric and respiratory derangement and their cure by the continuation of the bromides in larger doses. These forms of epileptic manifestations are obviously different from the attacks of narcolepsy described by Gélineau, of which the case herein reported is an example. There are reported cases in which the basis of the sleep attacks were either hysterical or epileptic but in which the signs

of both diseases were combined in such a way that their differentiation was difficult, as in the cases reported by Sahlman, Rousseau, Porter and others. The cases of Friedmann, while he refers to them as "not epileptic," evidently bore a very close relation to that neurosis; in several the attacks occurred in patients who had, or later developed, genuine epileptic attacks; they were in some cases attended with relaxation of the sphincters, etc., and the description of the attacks themselves, the sudden onset, staring eyes, lack of response to stimuli, etc., show their epileptic nature.

Oppenheim, in his text-book, and Ch. Féré in a paper on the subject "Le sommeil paraxystique" regard narcolepsy as merely a symptom, and taken simply in the sense of parxysmal sleep attacks this is undoubtedly correct. Oppenheim speaks of them under the headings of epilepsy, hysteria, and neurasthenia, and Féré also includes various organic causes. It is true that sleep attacks are symptomatic of these affections, but it is also true that sleep attacks that are different from the symptomatic attacks described by these authorities are occasionally met with, and it is to these that the name narcolepsy or some similar name should be given. Ballet in his "Contribution a l'étude du sommeil pathologique (Quelques cas de narcolepsie)" refers to narcolepsy as merely a symptom, the opposite of insomnia, for which he gives as causes: First, visceral diseases and disturbed nutrition; second, vicious hygiene, eating too much, etc.; third, deficient oxidation, diabetes, etc.; and fourth, vicious functionating of the nervous system. All nervous diseases, in a sense, are due to impaired or vicious functionating of the nervous system; epilepsy, hysteria, and many others may be included in this category; why not then make of these cases of narcolepsy a separate disease or at least a syndrome? They have sufficient individuality to permit of their being readily diagnosed from other neuroses or from the merely symptomatic attacks of sleepiness; they are not of themselves symptomatic except of neuro-psychic degeneration (Ribakoff) which is a reputation they would share with the other neuroses so-called; and finally they are benefited by a distinctive treatment. I agree with Foot

that the name hy pnolepsy is a much better descriptive term than narcolepsy, and its adoption would tend to lessen the confusion on this subject. It is best described as a syndrome, occurring in individuals with at least a functionally degenerated nervous system, and consisting of irresistible attacks of sleep, ariable in frequencyand regularity, irrespective of occupation, surroundings, or of the taking of food or other somatic condition and from which the patient can be easily aroused with the full possession of his mental faculties.

Similar sleep attacks are but rarely a symptom of organic or visceral diseases, and their diagnosis presents little difficulty. The diagnostic features of hysterical pseudo-narcolepsy have already been given. Epileptic pseudo-narcolepsy is distinguished by the sudden onset, the stiffness and rigidity of the limbs, staring eyes, etc., which are not the appearances of sleep, the difficulty of awakening, and the post-epileptic confusion.

What effect has the existence of such cases as these on our ideas concerning the philosophy and the physiology of sleep, and what, in particular, is the cause of these peculiar sleep attacks?

The man whose history is given in this paper when in one of his sleep attacks is to all signs and appearances enjoying a peaceful, natural sleep. Sleep, like food is necessary to the continuation of the life and health of the individual, but we do not ordinarily eat or sleep on this account. Reproduction is necessary to a continuation of the species, but most people will admit that sexual desire is the impelling force which is acting on the individual. In a like manner it is hunger, the desire for food, that impels us to eat, and there is a sensation, in many respects similar to these, that impels us to sleep. The desire to sleep, like the desire to eat, is usually regarded as indicative of an organic need, but neither is necessarily so. In many organic diseases, especially those affecting the stomach, the desire to eat may be much increased. Gluttonous individuals who eat enormous quantities of food for which there is no organic need are not uncommon; in various mental diseases gluttony is a symptom, and finally there are reported cases of individuals in

whom hunger recurred at such short intervals and was so imperious that the patient had always to carry some article of food with him. Cases of the sort last referred to with a perversion of the appetite for food correspond closely with the case reported in this paper in which there was a perversion of the appetite for sleep. Both conditions must be regarded as due to a mental defect. The time of sleeping and the amount that will be taken is rather a habit than a fixed rule of nature and is capable of the widest individual variations. The average individual sleeps a certain portion of each twenty-four hours; it is his fixed habit to do so, and at a certain time each day be feels sleepy, but a perversion of the desire to sleep, a perversion of a habit, will bring on the desire to sleep at any time and with added intensity. Such an explanation of the case offers no difficulties to those who have given any study to organic desires in general and their perversions.

Pierre Janet has analysed the pathogenesis of some of these impulsions, among which is the case referred to above, in which the patient at short intervals is imperatively attacked with the desire to eat. As a result of the psychological analysis of these cases he concludes that the impulsions arise in neuro-paths as a result of attacks of depression from emotional causes and to these the impulsions are joined in a rather accidental manner. For instance, in the above case of Janet's the patient first feels weak, depressed, empty, etc., for the relief of which she takes food; the taking of food soon becoming an imperative necessity. The manner in which the impulsion to sleep arises in such cases as the one reported in this paper is in all probability identical with the above. The patient feels depressed, weak, tired; if walking "his legs give way under him" just before the sleep attack; a natural mental process indicates sleep as a remedy upon which basis sleep becomes an imperative idea. An indication that the tiredness he feels is not real fatigue is found in the fact that no matter how short the time he sleeps he awakes feeling refreshed and strong. The condition is not hysterical; Janet makes the statement: "We must not forget that the cause of the impulsion is, above all, in the underlying attack of depression; we must endeavor

to discover, what is unfortunately not always possible, the physical and moral conditions that determine it; and we must by all sorts of hygienic means, by proper mental treatment, prevent its reappearance. It will be easily seen that the therapeutic measures would be different in cases where the impulsions depend on sub-conscious phenomena or suggestions as is often the case among hysterics."

It is obvious that this view of the pathogenesis of the impulsion as applied to attacks of sleep is not consistent with many of the older theories as to the production of sleep such as fatigue, auto-intoxication, etc., but makes sleep a positive function of the mind; so that from a study of this case we arrive by another route at the same conclusion as Ed. Claparède that "sleep is not a purely negative or passive state, not the result of an arrest of function: it is a positive function, an act of a reflex order, an instinct." This instinct may be regarded as developing along well-recognized lines of evolution, according to the law of "the survival of the fittest," and in a plane analogous to the instinct of self-preservation. According to this theory Claparède does not regard sleep as the result of fatigue or auto-intoxication but as a reflex designed in normal persons as a protection against fatigue and its consequences. "The mechanism of sleep consists of a reaction of disinterest for the situation present. It is not the irritability or the receptivity which is abolished, but the reactivity of interest and the reactivity of adaptation. The organism profits by the arrest of muscular effort, and the relaxation of the 'mental tension' is probably compensated for by an increase in the vegetative tension." This "biological theory" of sleep explains in a much more satisfactory manner than any other theory the correlated phenomena of sleep; for instance, the onset of sleep may be prevented by the presence of more powerful instincts or those which have, at the time, a greater interest, such as the instinct of self-preservation; a fact which it would be difficult to explain if sleep were due to fatigue or the presence of toxic substances in the body. In man and in many animals sleep follows a natural physiologic rhythm; this can be explained in the same way that Claparède explains hibernation; that it is a secondary adaptation to environment.

Claparède reviews the theories that have been suggested for the cause of sleep: cerebral anemia and hyperemia; lymphatic hypertension, which is similar to the osmotic theory recently put forward by Devaux; interruption of conductivity in various parts of the brain or at the periphery; the histologic theories, retraction of the dendrites, etc.; the inhibition of intellect; default in excitations; and the supra-physiologic hypotheses; and finds as objections to all of them, that they are based on uncertain data; that they are in many cases more likely a consequence than a cause of sleep; and finally, supposing that these phenomena were the cause of sleep, their cause would still require explanation. The bio-chemical and toxic theories are open to the objections that: — sleep and fatigue are not parallel conditions; sleep can be voluntarily retarded and is retarded by instincts of greater interest; the influence of quiet, or of monotonous stimulation, such as a sermon, in producing sleep; and the partial sleep from which the sleeper is aroused instantly by a particular stimulus while sleeping soundly through other stimuli; for instance, the mother who wakens at the first cry of her baby.

A. Lorand regards sleep as a function of the mind but insists that it is regulated by the secretion of the thyroid gland. The evidence that he brings forward to support this assertion is far from conclusive, and the same may be said of Alberto Salmon's hypothesis that the internal secretion of the pituitary body is the cause of sleep.

REFERENCES

Ballet, Gilbert.— Contribution a l'etude du sommeil pathologique (Quelques cas de narcolepsie). Revue de Med., 1882, 2, p. 945.

Blondet, M.— Observation de sommeil léthargique de longue periode, et nouvelles applications zoologiques de la theorie du sommeil. Gaz. hebdomadaire, October 28, 1864, p. 726.

Blodgett, A. N.— A case of Narcolepsy. American Journal of Medical Sciences, August, 1906.

Camuset, G.— A propos de la narcolepsie. Gaz. de Hôp., 1880, p. 659.

Caton.— Case of Narcolepsy. Trans. of the Clin. Soc. of London, 1889, p. 133.

Charcot, M. — Attaque de sommeil. Gaz. de Hôp., 1888.

Chavigny, M. — Narcolepsie (sommeil pathologique), Soc. Méd, de Hôp. de Lyon, December 13, 1904, in Lyon Médicale, December 25, 1904, p, 1073.

Claparède, Ed. — Theorie biologique du sommeil. Archiv de Psych., T. 4, 1905.

Cousins, Ward. — A Case of Remarkably Prolonged and Profound Sleep. Medical Times and Gaz., April 18, 1863.

Dana. — On Morbid Drowsiness and Somnolence. A Contribution to the Pathology of Sleep. The Jour. of Nervous and Ment. Dis., 1884, p. 153.

Devaux, E.— Theorie osmotique du sommeil. Arch. Gen. de Méd., April 10, 1906, p. 903.

Drosdow, V. J. — Morbus Hypnoticus. Arch. f. Psych. u. Nervenkrankheiten, Bd. 13, p. 250.

Edwards, James. — Report of a Remarkable Case of Somnolency. Lancet, Vol. 1, 1884, p. 309.

Ewen. — A Case of Narcolepsy, Boston Med. and Surg. Jour., June 8, 1893.

Féré, Ch. — Le sommeil paraxystique. Semaine Medicale, 1893, p. 465.

Féré, Ch. — Crises de courbature. Annales Medico-psych., 1888, p. 136.

Féré, Ch. — Note sur la narcolepsie épileptique. Revue de Med., 1898, p. 430.

Féré, Ch. — Note sur l'apathie épileptique. Revue de Med., 1891, p. 211.

Fischer, Franz. — Epileptoid Schlafzustande. Arch. f. Psych. u. Nervenkrankh., Bd. 8, p. 200.

Foot, A. W. — Narcolepsy (Sudden Periodical Sleep Seizures). Dublin Jour. of the Med. Sciences, Vol. 82, p. 465.

Franceschi, Francesco. — Il sonno patalogico nei tumori cerebrali, contributo clinico et anatomo-patologico. Riv. di Patol. nervosa e mentale, Vol. 9, p. 457.

Abs. — Revue Neurol., January 15, 1905, p. 37.

Friedman, M. — Uber die nicht epileptischen Absencen oder kurzen narcoleptischen Anfalle. Deut. Arch. f. Nervenheilk., 1906, Bd. 30, S. 462.

Gay, John. — Sleeping Girls. Lancet, July 3, 1880, p. 31.

Gairdner, W. T. — A Case of Lethargic Stupor or Trance. Lancet, December 22, 1883.

Gélineau. — De la narcolepsie. Gaz. de Hôp., 1880, pp. 626, 635.

Gilles de la Tourette. — Des attaques de sommeil hysterique. Arch. de Neurol., 1888, p. 293.

Hayman. — Sleeping Girl of Turville. Lancet, June 12, 1880.

Jacoby. — Falling Asleep while at Work. New York Med. Record, 1890, p. 253.

Janet, Pierre. — On the Pathogenesis of Some Impulsions. The Journal of Abnormal Psychology, Vol. 1, No. 1, p. 1, 1906.

Lamacq. — Quelques cas de narcolepsie. Revue de Med., 1897, p. 699.

Laségue, — L'appétit du sommeil. Gaz. de Hôp., January 3, 1882.

Legrand. — Un cas de narcolepsie. France Méd., 1888, 1, p. 37.

Levi, Leopold. — Somnolence et narcolepsie hépatique. Arch. Gen. de Med., 1896, p. 58.

Loney, D. W. — An Obscure Case. Medical Record, June 16, 1888, p. 663.

Lorand, A. — Myxoedema et maladie du sommeil. Presse Médicale, 1905, p. 787.

McCarthy, D. J. — Amer. Jour. of the Med. Sciences, 1900, p. 178.

MacCormac. — A Case of Narcolepsy. Brain, 1899, p. 469.

MacNamara. — Epistaxis. Dublin Jour. of the Med. Sciences, 1862, p. 39.

Madden, T. M. — On Lethargy or Trance. Dublin Jour. of the Med. Sciences, 1881, p. 297.

Marduel. — Note sur un cas de maladie du sommeil. Lyon Med., 1872, p. 311.

Matas. — Morbid Somnolence. New Orleans Med. and Surg. Jour., 1884, January.

Mendel, E. — Ueber Anfalle von Einschlafen. Deut. Med. Wochenschr., 1880, p. 266.

Morton. — Journal of Nervous and Mental Disease, 1884, p. 615.

Oppenheim. — Lehrbuch der Nervenkrankheiten. Fourth Ed., Vol. 2.

Parmentier. — De la forme narcoleptique de l'attaque de sommeil hysterique (pseudo-narcolepsie hysterique). Arch. Gen. de Med., 1891, pp. 528, 662.

Porter, K. H. — Narcolepsy. Medical Record, 1880, p. 610.

Ribakoff. — Revue de Med., 1897, p. 552.

Rousseau. — Obs. de narcolepsie dans la demence et l'epilepsie . Encephale, 1881, p. 709.

Sahlmen. — Ein Fall von Schlafsucht. Berl. klin. Wochenschr., 1881, p. 95.

Salmon, Alberto. — Sull origene del sono. Studio della relazioni fra il sonnol la funzione della glandula pituitaria. Florence, 1905.

Author's abs., Review of Neur. and Psych., December 3, 1905, p. 817.

Skerrit and Stewart. — A case of Protracted Sleep Extending over Fifty Days. British Med. Jour., 1898, p. 957.

A SYMPOSIUM ON THE SUBCONSCIOUS

Prefatory Note

There is at present no consensus of opinion, either among psychologists who deal with the normal, or among the medical psychologists who deal with the abnormal, as to the class of phenomena to which the term "subconscious" shall be applied, or, as to the interpretation of these phenomena. Thus, few writers mean the same thing by "subconscious," and even when two writers agree upon the same psychological interpretation of given phenomena each is likely to describe different sets of phenomena under the term. It has seemed accordingly to the Editor that a symposium in which those who deal with the normal and abnormal might thresh out the difference of views would be timely and might help to an agreement in terminology at least and possibly in interpretation.

In this number Professor Münsterberg, Harvard University, Professor Th. Ribot, Collège de France, and Professor Jastrow, Wisconsin University, open the discussion and have their innings. In the next number the discussion will be continued by contributors who view the subject from the standpoint of abnormal psychology. The following general statement of the present terminology and meaning of the subconscious will be of assistance to the general reader in following the discussion in this and the next number. Professor Münsterberg has very clearly stated the three dominant theories of the subconscious backed respectively by laymen, physicians and psychologists, and it is well that these three be kept well in the foreground of the discussion. Perhaps these three types are sufficient for a discussion in a symposium, and yet, there are three other meanings of the subconscious, one or other of which is held by individual writers and of which the reader should be reminded at least. These six may be summarized thus: First, it is used to describe that portion of our field of consciousness which, at any given moment, is outside the focus of our attention; a region therefore, as it is conceived, of diminished attention. Subconsciousness here, therefore, means the marginal states or fringe of consciousness of any given moment, and the prexfix *sub* designates the diminished or partial awareness that we have for these states out in the corner of our mind's eye.

The second meaning (Professor Münsterberg's second type) involves a theory which is an interpretation of the facts. It is with this meaning particularly that the term is used in abnormal psychology. Subconscious ideas are dissociated or split-off ideas; split off from the main personal consciousness, from the focus of attention — if that term be preferred — in such fashion that the subject is entirely unaware of them, though they are not inert but active. These split-off ideas may be limited to isolated sensations, like the lost tactile sensations of anesthesia; or may be aggregated into groups or systems. In other words, they form a consciousness coexisting with the primary consciousness, and thereby a doubling of consciousness results. The split-off consciousness may display extraordinary activity. The primary personal consciousness as a general rule is of course the main and larger consciousness; but under exceptional conditions, as in some types of automatic writing, the personal consciousness may be reduced to rudimentary proportions, while the secondary consciousness may rob the former of the greater part of its faculties and become the dominant consciousness.

The third meaning (Professor Münsterberg's first type) is an elaboration and extension of the second, and thus becomes a theory which not only gives an elaborate interpretation of the facts of observation, but becomes a broad generalization in that it propounds a principle of both normal and abnormal life. Under it the dissociated states become synthesized among themselves into a large self-conscious personality, to which the term "self" is given. Subconscious states thus become personified and are spoken of as the "subconscious self," "subliminal self," "hidden self," "secondary self," etc.; and this subconscious self is conceived of as making up a part of every human mind, whether normal or abnormal, and is supposed to play a very large part in our mental life. Thus every mind is double; not in the moderate sense of two trains of thought going on at the same time, or being engaged with two distinct and separate series of actions at the same time; or even in the sense of there being certain limited discreet perceptions of which the personal consciousness is not aware; but in the sense of having two selves which are often given special domains of their own and spoken of as upper and lower; the waking and submerged selves, etc. This theory, therefore, not only extends the principle of dis-

sociated ideas into normal life and makes these constant elements of the human mind, but enlarges the subconscious synthesis into something that is self-conscious and which can speak of itself as an "I."

The fourth meaning of subconscious is that which by definition would have it include; first, the dissociated ideas embraced under the second definition above stated; and second, all those past conscious experiences which are either forgotten and can not be recalled, or which may be recalled as memories, but for the moment are out of mind because in the march of events our thoughts have passed on and we are thinking about something else. All these potential memories are placed in the subconscious which plainly is thus made to define two classes of facts; namely, dissociated states which are active, and those which are inactive, *i.e.*, forgotten, or out of mind (Sidis' definition).

The fifth use of the term (Myers' doctrine) is an expansion of the third meaning and involves a metaphysical doctrine which transcends all facts which one can possibly observe in others or introspect in himself. It is more specifically described as the "subliminal," which is used as a synonym for subconscious. The subconscious ideas, instead of being mental states dissociated from the main personality, now become the main reservoir of consciousness and the personal consciousness becomes a subordinate stream flowing out of this great storage basis of "subliminal" ideas as they are called. We have within us a great tank of consciousness but we are conscious of only a small portion of its contents. In other words, of the sum total of conscious states within us only a small portion forms the personal consciousness. The personal self becomes even an inferior consciousness emerging out of a superior subliminal consciousness sometimes conceived as part of a transcendental world, and this subliminal consciousness is made the source of flights of genius on the one hand, while it controls the physical processes of the body on the other.

The sixth meaning (Professor Münsterberg's third type) of the term is an interpretation on pure physiological principles of the phenomena customarily attributed to the activity of dissociated ideas. Some psychologists believe that phenomena like automatic writing and speech, the so-called subconscious solution of arithmetical problems, hysterical outbursts, etc., can be best

explained as pure neural processes unaccompanied by any mentation whatsoever. These phenomena become therefore pure physiological organic processes of the body. The term subconscious thus becomes equivalent to the old theory of Carpenter's "unconscious cerebration."

The reader will observe that this last interpretation is the one which has proved most acceptable to two of the contributors in this number.

EDITOR

I

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THE few pages which a symposium allows do not give opportunity to sift the material which has led to the doctrine of the subliminal consciousness. My practical studies in hypnotism, hysteria, automatic writing and similar abnormalities suggest to me decided hesitation in accepting the whole of the usual evidence without cross-examination. And yet, to find a common basis for a theoretical inquiry, it certainly seems wiser not to quarrel about the experiences but rather to accept the facts as the most sanguine observer might present them.

Yet, even if we welcome the observed facts in their widest limits, there can be no doubt that the subconscious itself is never among them. The facts which we find must be either conscious psychical facts from which we draw inferences as to subconscious psychical states, or physical expressions which cannot be explained by conscious ideas, emotions, volitions, and which thus demand not-conscious factors for their explanation. The conscious experience of crystal-vision or of remembering the tactual experiences of an anaesthetic hand or the sudden solution of a problem which had slipped from consciousness, or, if you will, every act of genius may point to such hypothetical subconscious processes, but certainly the conscious seeing and remembering and solving is given, while the subconscious is con-

structed for purposes of explanation. In the same way the physical processes of automatic writing or of hysteric action are observable; the subconscious agencies are superadded elaborations.

To acknowledge that the subconscious is found only through constructions in the service of explanation does not detract from its scientific reality; the fluid core of the earth is of the same logical type. But such acknowledgment does imply that the only correct question is this: which of the many constructions of the not-conscious causes is most useful for the explanation of the observed facts? It is evident, however, that the preference for one construction or another may and must be influenced by various side-factors. When, for instance, the physician approaches those facts, his interest tends naturally to their practical treatment. He thus shapes his constructions in a way which brings the differences from normal mental life to the clearest relief and which offers a simple working description, definite enough to determine beforehand the events to be expected in the behavior of the patient. When on the other hand the layman comes to the same facts, he is struck by their surprising character, and this wonder awakes the feeling of the general mysteriousness of the world; he thus tends to prefer a construction which explains the observed facts in a way that leads at the same time to the satisfaction of higher desires, perhaps even of religious emotions. When, finally, the theoretical psychologist approaches the same facts, he has in mind no therapeutical treatment or emotional demand, and yet he too looks out far beyond the curious facts themselves; his interest is turned toward the remainder of mental life, and he thus prefers explanations which bring the abnormal facts in closest relation to the normal processes and cover both by the same formulae.

We therefore find three types of theories, the first backed mostly by laymen, the second by physicians, the third by psychologists. Yet the lines are not to be drawn sharply. That first group says: the subconsciousness is the psychical system of a full real personality below the conscious person; that subconscious self remembers, thinks, feels, wills on

its own accord, influences our conscious life, helps it out, shines through it and causes the abnormal facts. The popular mind clings to such a convenient method of explanation the more closely as it is on this basis easy to bring the subconscious selves into telepathic connection or to link them with mystical agencies. The second group says: the subconscious is psychical but not a system, it is made up of ideas, but they do not at first form a personality; it is dissociated split off mental material which only in a secondary way may flow together into a new detached self. The subconscious is then not at all a regular psychical foundation but something either pathological or at least artificial. The third group, finally, says: the subconscious that underlies the abnormal facts is the same that underlies the ordinary processes of memory, attention, etc.: it is not psychical at all but a physiological brain process.

The emotional demands of the mystic, the practical demands of the physician, and the theoretical demands of the psychologist are well fulfilled by these three types of theories, and to a certain extent they can be helpful side by side; the purpose which we have before us determines each time which of the three modes of construction is most useful for our special end. At least the second theory finds points of contact with each of the others. With the first it shares the belief that the subconscious is psychical, while the one conceives it as systematized, the other as dissociated. With the third it shares the conviction that there is no independent self below the consciousness, while the one calls the underlying processes psychical, the other physiological. This latter difference does not deter the friends of the second theory from admitting also a physiological basis for the subconscious ideas, nor the adherents of the third theory from using psychological terms like idea, emotion, volition, for the short description of those complex physiological events as if they were accompanied by psychical phenomena. Yet, the difference of principle remains, and if I have to choose , I feel inclined to take the place with the psychologists in the third group: the subsconcious is not psychical at all.

I point here only to the most general reasons which

determine my decision. The explanations which every theory of the subconscious offers are twofold. There is firstly a reservoir which keeps the subconscious ideas, and secondly a mental workshop which manufactures the products of thought as far as they are not elaborated consciously. The reservoir, full of dissociated ideas, has to explain the occurrence of strange conscious ideas and of otherwise surprising behavior. The workshop has to explain the conscious results of the evidently synthetic labor which goes on independently of our conscious control. What is that reservoir? Of course, if we call it a reservoir of ideas we have yielded the whole point; ideas are of mental stuff. Students of abnormal psychology here indulge in the same type of circular conclusion which is frequent with animal psychologists. The latter reason that animals of a certain development must have consciousness because they have memory. Memory is of course a psychological expression, and the question is just whether the behavior of those animals has to be explained psychologically by memory or physiologically by an after-effect of earlier stimulations. The decision whether the one mode of explanation or the other is to be applied cannot itself be deduced from the observed facts, but must precede the study of the facts; with other words: the question whether animals have consciousness or not cannot be answered by observation but belongs to epistemological arguments. In the same way here; no fact of abnormal experience can by itself prove that a psychological and not a physiological explanation is needed; it is a philosophical problem which must be settled by principle before the explanation of the special facts begins.

To make the explanation dependent on the special abnormal facts is the more unjustified as the situation is in no way different from that of ordinary memory. If I reproduce by association a name or a landscape seen ten years ago I can postulate too that all this was lying in me as a subconscious idea or at least as a mental disposition and that it could not be reproduced if something on the psychical side were not lasting through those ten years outside of my consciousness. But those who insist that the memory idea presupposes a lasting mental disposition and cannot be

explained by physiological after-effect, only forget that the same logic would demand a special mental disposition also for each new perception. The whole "mystery" of an idea entering into consciousness presents itself perfectly every time when we use our eyes or ears, and it is astonishing how easily psychologists overlook the parallelism of the problems in regular perception, in ordinary memory and in the abnormal awaking of dissociated ideas. To say that the perceptive idea too finds a special psychical disposition would be absurd, as we should then need such subconscious mental agency for every possible impression, and if every possible impression is equally prepared in the subconscious the appearance of no one would really find its explanation as every other would have the same chance. In the case of the perception we are thus obliged to rest in the explanation of a psychical idea by a physical brain process only. But if the fresh idea is dependent only on the fresh excitement in the brain, there is not the slightest additional difficulty in interpreting by the same principle the recurrent idea of memory by the recurrent brain process without any reference to a lasting psychical trace. And if the normal memory can work without subconscious mental help, there is no reason suddenly to presuppose it for the abnormal awaking of apparently unaccountable ideas as in crystal vision and a hundred similar phenomena. The illusions of the ordinary memory easily lead over from the normal reproduction to the pathological. Brain processes without subconscious psychical forerunners furnish all that we need in the abnormal cases for the same kind of understanding which science has for seeing and hearing.

But if we have no reservoir with stored-up subconscious ideas, we cannot have a workshop either to prepare therein subconsciously combinations of subliminal material. It is again the physiological action which is entirely sufficient to explain just as much as the mental mechanism could explain. Of course popular science turns naturally to psychical conceptions first, because those hidden processes which we must presuppose to explain the conscious results are thoroughly purposive and selective. But have we really a right to insist that purpose and selection refer necessarily

to psychical factors and are incomparable with physiological processes? On the contrary, whenever purpose means as it does mean in this case a certain adaptation to the ends of the individual we must acknowledge that every organism shows such purposiveness. When the body digests a meal a hundred thousand cells are performing the most complex acts for the purposes of the organism, and they select the right chemical processes more safely than any chemist would be able to do; yet nobody presupposes that there is a mental interplay in the intestines. In the same way all the other tissues are performing adjusted acts by physiological causes: have we any reason to expect less from the tissues of the central nervous system? Why cannot they too produce physiological processes that lead to well-adjusted results and that means to apparently purposive sensorial excitements and motor impulses. But we must go much further still. Not only that the physiological cerebration is well able to produce the "intellectual" result, but the physiological side alone is fit for it, the psychological is utterly unfit. To the popular mind that statement seems of course absurd, and indeed it needs some philosophical insight into the logic of sciences to appreciate the situation. To bring it to short formulation, of course without full argument, we might characterize it as follows. Our inner life is a system of attitudes, of purposes, of will. But it is not for psychology to deal with the inner life in its immediate teleological reality. This real life and its real inner connectedness demand for their understanding our interpretation and appreciation it is furnished for instance by the student of history or of philosophy. Psychology, on the other hand, is a science which aims at description and explanation of inner life, a logical attitude which is artificial. Psychology considers the inner experience, therefore, for its special purpose as a series of describable phenomena; it transforms the felt realities of will into perceivable objects, into contents of consciousness. Through this transformation the real purposiveness, yes, the whole inner connection of the will acts is eliminated; the psychological phenomena as such have no intentions and no significance any more but are merely bits of lifeless mental material, complexes of unphysical

objects made up of elements which we call sensations. And this material which, through the objectification, has lost all its inner teleological ties, has not even the chance to enter into any direct causal connections. The physical phenomena can and must be conceived as causally connected, the psychical not. There cannot be causality where the objects do not last but are destroyed in the very act of their appearance; just this is characteristic of all psychological contents. The world is physical, in so far as we conceive it as identical with itself in ever new experiences, and to elaborate this self-identity of the material universe is the meaning of the causal treatment. The object is psychical just in so far as it is not identical in new experiences, but is created anew in every act. Therefore there is no direct causal connection of the psychologized inner life; therefore there is only an indirect causal explanation of psychical phenomena possible in so far as they can be conceived as accompaniments of physiological processes. In short, even the full conscious mental facts do not really hang together when viewed from a psychological point of view and are thus unfit to explain any results through their causal interplay; they are epiphenomena, and the causal working of the objectified conscious facts goes on in the physiological substratum. How misleading, therefore, to invent and to construct subconscious psychical phenomena for the express purpose of producing causal results instead of leaving that to the safe action of the cerebrum. The only motive for doing it is the popular confusion,— certainly not unfrequent even among psychologists,— which does not discriminate between the psychological material as part of the world of phenomena and the teleological significance of our inner life in the world of meaning. The will as purpose binds by its meaning the facts of immediate life together and enters as such into ethics or law or history, but the will as psychological content of consciousness does not bind anything and does not point to anything beyond itself; it is simply a passing phenomenon. And yet only in this unreal form, constructed by abstractions and conceptions, the will can enter into the system of descriptive and explanatory science. In the explanatory system of psychology the purpose as such does thus not explain

anything, just as astronomy has learned that the sixteenth century mixed the categories when the beauty of certain astronomical curves was taken as the actual cause for certain astronomical movements.

There is thus no reason to conceive a psychical fact existing outside of consciousness,— and that corresponds to the only significant meaning of consciousness. Consciousness is nothing which can be added to the existing mental facts, but it indicates just the existence of thepsychical phenomena. Consciousness cannot do anything, cannot look here and there and shine on some ideas and leave others without illumination. No, consciousness means merely the logical relation point of its contents; the psychical phenomena are in consciousness as the physical phenomena are in nature; there cannot be physical phenomena outside of nature. Seen in this way the psychologist must sharply separate those pathological cases which really show positive abnormal phenomena in the conscious facts themselves and those which from the standpoint of consciousness present negative occurrences only,— blanks where ideas are expected. To the first class belongs, for instance, the alternating personality; that is an abnormal grouping of psychical experiences. To the second class belong all those various phenomena which give rise to the theory of dissociated or automatic subconscious psychical processes. The dissociated idea is psychologically not existent just as the ticking of the clock in my room does not exist for me when my attention is turned to my reading; the ticking reaches my brain and may there have after-effects, but the sound-sensation is inhibited. In this way all that which suggested the theory of the mental subconscious becomes simply increased or decreased inhibition. Why the mental accompaniments of certain physiological processes are sometimes inhibited must of course itself be explained physiologically; everything seems to point to the relation between sensory excitement and the openness or closedness of the motor channels of discharge.

It is true that such physiological explanation gives small foothold for that mystical expansion of the theory which seemed so easily reached from the subconscious

mental life. But it is not the least merit of the scientific physiological explanation that it obstructs the path of such pseudophilosophy. Psychology even if it takes in psychological phenomena which lie under the cover of the subconscious, can never be the starting point for a metaphysical view of reality because, as we pointed out, the psychological material has been reached by an artificial transformation of the real life experience. The psychological phenomena are as unreal as the atoms which mathematical physics constructs for its logical purposes. If we seek real philosophy we must go back to the true immediate will experience out of which the psychological constructions are shaped but which is as such not possible object of description. An interpretation and appreciative understanding of this real life, even in the most idealistic philosophy, can then never conflict even with the most radical physiological explanation of abnormal psychology. The physiological psychologist thus ought carefully to avoid the language of the subliminal self theory as it flows over too easily into antiphilosophy. But he has no reason to avoid the language of the dissociated-idea, theory — provided that the psychological word is taken as a short label for the very complex neural physiological process. If I had to write the history o- Miss Beauchamp I should conceive all subconscious prof cesses in physiological conceptions, but I should describe them, for clearness and convenience sake, as the master of our symposium has so masterly done, in the terms of psychological language.

II*

BY THÈODORE RIBOT

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THE question of the subconscious is so broad, so complex and so obscure that I shall be content if, in the brief remarks which follow, I succeed in throwing even a little light upon it.

In this question we must distinguish two sides: the

* Translation by J. W. Courtney, M.D., Foreign Corresponding Member of the Neurological Society of Paris.

positive, composed of facts; and the hypothetical made up of theories.

With regard to the facts, I find it advantageous to establish two categories:

First: The *static* subconscious, comprising habits, memory and, in general, all organized knowledge. It is a state of conservatism, of repose (albeit relative), since representations undergo incessant corrosions and metamorphoses within themselves.

Second: The *dynamic* subconscious which is a latent state of activity, of incubation and elaboration. Authors who have treated this subject, have furnished examples of it in profusion. From this source comes inventive work, inspiration in all sorts of discoveries, improvisation and even — to a feebler degree and in a more modest form — sudden repartee and *bons mots*; in short everything which sparkles forth from us spontaneously.

Naturally, discussion and conjecture have focussed by preference upon the subconscious processes we call "dynamic," since these are the most varied and the most fertile in results.

On the nature of this subconscious activity, however, one finds only discord and obscurity. Doubtless, one may maintain that, in the case of the inventor, everything goes on in the subconscious as it does ordinarily in consciousness itself, barring a message which does not reach the *ego*; that the work which one may follow in consciousness, with its advances and its retrocessions, is identical with what goes on without our knowledge. Such an hypothesis is possible, but far from proved.

Again, concerning the essential nature of subconscious activity, two diametrically opposed theories have been put forward:

The first (Myers, Delboeuf and other more recent authors) bears the stamp of a peculiar biologic mysticism. According to these authors, in certain men subconscious activity is invested with almost supernatural power, not only of a trophic and physiologic, but also of a psychologic order, and constitutes in the individual an intermediate link between the human and the divine.

The second, which has attained its most complete expression in Boris Sidis' book on suggestion, draws this picture of our subconscious, which is far from flattering: it (the subsconcious) is stupid, uncritical, extremelycredulous, without morality, and its principal mental mechanism is that of the brute — association by contiguity.

In my opinion two such hypotheses are not at bottom irreconcilable, since the above advantages and defects make an integral part of human nature taken in its totality, and since they are unequally distributed among men. A much more important question, however, is that of the ultimate nature of subconscious activity. Although many authors have tried to evade it by enveloping it in obscurity and doubt, it comes back to this inexorable dilemma,— psychologic or physiologic ?

The psychologic solution rests upon an equivocal use of the word *conscious*. The conscious bears an unvarying stamp: it is an internal event, which exists, not in itself, but for *me* and in so far as it is recognized by *me*. Now, this solution admits that, if from the clear realm of consciousness one descends to the "marginal" consciousness and finally continues to go lower and lower to the unconscious, which only manifests itself by motor reactions, the primitive state thus impoverished continues to remain to the end identical in its essence with the conscious. Underlying the psychologic theory, in all its forms, there is the tacit hypothesis that the conscious is assimilable to a quantity which may decrease indefinitely without ever reaching zero. It is a postulate which nothing justifies. The experience of psychophysicians with regard to the "threshold" of the conscious, without settling the question, would rather justify the contrary opinion: the perceptible *minimum* appears and disappears brusquely. This fact and others which might easily be pointed out seem to me unfavorable to the hypothesis of the increasing or decreasing continuity of the conscious.

The physiologic solution is simple and comprises few variants. It maintains that subconscious activity is purely cerebral; the psychic factor which ordinarily accompanies the work of the nervous centres is absent. I incline toward

this hypothesis, without disregarding its shortcomings and its difficulties; but, at least, it seems to me not contradictory as is the adverse hypothesis. It has been established by numerous experiences (Féré, Binet, Mosso, Janet, Newbold, etc.) that unconscious sensations (not apperceived) act, since they produce the same reaction as conscious sensation, and Mosso has been able to maintain "that the testimony of consciousness is less reliable than that of the sphygmograph," but there are cases more complex. For instance, that of invention is quite different, for it does not merely suppose the adaptation to an end which the physiologic factor would suffice to explain; it implies a series of adaptations, corrections, and rational operations whose nervous action of itself furnishes us but few examples. In spite of everything, I am coming more and more to the side of the physiologic hypothesis and am quite in accord with the opinion recently set forth in America by Jastrow, and more clearly by A. H. Pierce in his "Studies in Philosophy and Psychology" (1906), in which he has presented in favor of the cerebral interpretation such an excellent plea that further attempts in this line seem to me useless.

There still remains the question of double personality, or to be more exact, of multiple personality.

At the present time the majority of psychologists admit that the *ego*, the person, is a synthetical complex, which, in its normal state, is made up of relatively stable elements, in spite of incessant variations. In the abnormal cases, when a new personality arises, one can scarcely doubt that the subconscious lends its aid to its formation; on the one hand, in its static form, by the resurrection of habits or of memories which seemed lost; on the other hand, in the apparition of intellectual or moral dispositions — higher or lower, good or evil, — which, latent until then, characterize the new *ego*.

This psychologic problem is nevertheless quite different from that concerning the nature of the subconscious. This new synthesis, of which the subconscious furnishes only the materials (and these only in part), depends upon profound causes, probably physiologic, having their roots in cenesthesia. Whatever opinion one may emit upon this last

cause, it is a distinct study which begins here; subconscious processes play a rôle which is secondary and subordinate and are, properly speaking, a result, an effect.

III

BY JOSEPH JASTROW

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TO one who has devoted a volume* to an exposition of subconscious phenomena, the invitation to contribute to a symposium is naturally interpreted as a request for a statement of the underlying and supporting conceptions of the work in question. The difficulty in meeting this request is inherent in the phenomena themselves; for it is the nature of these to require delicate shadings and gradings and all the complex blendings of a difficult chiaroscuro, in order to shape the resulting delineation into a significant picture. Yet when addressed to those who are familiar with the picture and its *genre*, and equally with the elements and the technique of the composition, a sketch with reënforced contours and unconcern for transitions and corrections will meet with ready interpretation.

I deem it a fundamental requisite of any adequate conception of the subconscious that it makes vital connection with the ordinary range of normal mental procedure, finding a natural place in an evolutionary interpretation of psychic function, and interpretable likewise in (general) terms of neural disposition. Such conception finds an equal obligation to discover and decipher within the range of normal fluctuations, a great diversity of relations,— of excess and abeyance, of distortion, temperamental facilitation and exaggeration and impediment, — that suggest unmistakably the minor abnormalities of subconscious function. It is difficult to overemphasize the significance of this intermediate realm. There are to be sought the sources of the

* The Subconscious (Houghton, Mifflin, 1906). Part three is especially germane to the considerations here presented.

streams, whose waters in turbulent confusion break through their normally confining channels in seeming *lusus naturae*. With these obligations fairly met, the conception may confidently yet tactfully enter the perplexing field of the abnormal, and in so doing will be disposed to emphasize once more the transitory, superficial, introspectively controllable procedures, that in their estrangement maintain some correspondence,— fragmentary, uncertain, elusive, or even incoherent in part though it be — with the normal home relations. Thus rooted firmly in normal procedure, the conception may undertake the special analysis of the complexly abnormal.

The aspect of the resulting conception would admittedly be seriously altered if it should prove nesessary in order to account for the abnormal varieties of experience, to assume a system of psychic relations in enlargement or correction of those seemingly adequate for normal psychology, and then in turn to revise the current psychological conception by a restatement in the light of the abnormal. Those who feel themselves forced by logical considerations or impelled by temperamental or philosophical preference to have recourse to such a remodelling of psychological relations have for the most part — and with wide diversity among themselves — proposed some form of secondary consciousness, coördinate or subordinate *alter ego*, subliminal self. Finding, notably in cases of disordered personality, a system of mental possessions and facilities seemingly out of relation to those of the normal self, they have concluded that there must regularly be such psychic satellites in the orbit, the presence whereof is not created but only revealed by a favoring eccentricity. They point out the notable range of experience, difficult of explanation, which the supposition of such a psychic relation might illuminate; and argue that any supposition that dispenses with such a psychic co-partner must in turn resort to devious assumptions to include within its explanatory scope the aforesaid divergent experiences.

For the tendency of this "dualistic" hypothesis to make alliance with extreme and gratuitous assumptions, the

scientific formulation thereof need not be held accountable.[1] The mass impression of the realm as of the detailed features, the entire trend of psychological investigation and of so much of insight as illumines psychic procedure, seems to me overwhelmingly and consistently to bear against any such assumption, even when most objectively and logically shaped. Here the ways divide. While investigation and accumulation of data may proceed profitably without raising this issue, systematic interpretation cannot go far without revealing the formative trend of the underlying conception. To me the subconscious is psychologically significant and logically defensible only under some form of concept that clusters about the organic unity of the mind, and from such a base surveys in orderly sequence of relation, the divergent realm of minor and major abnormalities.

The explanation of subconscious procedure under this unitary conception is still beset with hypothesis; the sketch thereof made by any one artist inevitably reflects a favorite perspective, an allegiance of school and method. Fundamentally the range of subconscious function must find a place in the mental system by reason of fitness or use, reenforced and developed by evolutionary influences, ultimately of a highly intricate nature. The degree as well as the manner of feeling-awareness[2] that attaches to functions that may qualify for a place in the psychic system is conditioned by the value of such an accompaniment or privilege in the functional efficiency. Fundamentally the subconscious status of certain functions is an expression of the mode of their representation in the physiological and psychological economy. It is a fact that influences in the shape of all sorts and conditions of stimuli, play upon the neuro-psychic equipment and modify its expressive behavior. If the reactions to such stimuli demanded an equable distribution of feeling-awareness throughout their range, there would

[1] The argument from alleged supernormal powers in freedom from or violation of accepted physical and mental limitations, the psychologist is hardly called upon to consider; though its actual prominence in the literature will excuse the comment that such use of the hypothesis but imposes an additional burden to be borne, and does not contribute to the logical force of the argument. To one firmly convinced of the truth of the "supernormal" data, the entire physical and mental world — quite as legitimately as the subconscious – may require an entire reconstruction.

[2] At times a neutral term without the inevitable implications of "consciousness" is useful. For this I suggest feeling-awareness.

be no provision (or a very different one) for subconscious functioning. The distribution of awareness as attaching to higher and lower, reflex and simply automatic and automatically familiarized behavior, sets forth this relation; as, again, direct experimentation by an "impressionistic" response to aspects of stimuli equalized beyond explicit differentiation or recognition corrobrates the result.

The analysis of subconscious procedure acquires additional complexity through the inherent many-sidedness of acquisition and expression. Through the facilitation brought about by experience, a lesser degree of awareness, a suppressed variety of its presence, accompanies–the sensitiveness to and the interpretation of outer stimuli as well as the voluntary aspect of the response (initiative). An equally important determinant is the distribution of the attentive attitude, in itself a fundamental factor of the psychic procedure. Peculiarly prominent in all is the will-like, consenting aspect of the incorporative process, by virtue of its intimate affiliation with the personal flavor of conduct, as through the selection and direction and integration of experience, a self emerges, matures and expands.

When the direction of interest in subconscious functioning is shaped towards an inclusion of abnormal relations, there are other obligations to be met. My exposition indicates my conviction that the conception thus emerging from the study of the normal legitimately and fairly applies to the abnormal field. The most instructive variety of the domestic species revealing relatively pronounced or independent subconscious functioning, I find in the diversified lapses popularly termed absent-mindedness. Though evanescent and superficial, the disengagement of the normally accompanying "privileges" of complete consciousness presented in such cases, and again their amenability to analysis constitutes this domain a peculiarly instructive example of what is meant by the subconscious in working trim. It is equally fortunate for the comprehension of the abnormal that so intrinsically abnormal a procedure as dreaming should be so common; and this both as furnishing a familiar alteration of mental state (physiologically conditioned), and as revealing the normality of the easy-going, revery-like, streams

of mental occupation that constantly and characteristically contribute to the psychic life.

The variants of dream states, the drug intoxications, trance and hypnosis present analogies of release, impairment and rearrangement of function in further extension of dreaming and mental abstraction. Abnormality in these regions is a shifting matter and centers about the orientation of the subject to his environment. Such orientation is variously interfered with by the invasions of projections from the inner world (analogous to those of trance, hypnosis, delirium, drug intoxication), or by the allied alternations and entanglements of rival syntheses of experience (multiple personality and the like). Such dissociations frequently betray their origin in subconsciously assimilated experience, and their growth by a like disenfranchised rumination, while differently instructive, are the more sudden curtailments of distortions of orientation in disintegrating lapses, not uncommonly of a "shock" origin. Throughout this series the type characteristics far outweigh in importance the vagaries of detailed manifestations, while the analyses of retention to loss, of one conscious synthesis to its rival (notably in the hysterical anaesthesias) are peculiarly significant in their revelation of the standard *modus operandi* of the abnormally subconscious, of the intercourse between dissociated groupings of function.

The fundamental difficulties surrounding this aspect of the conception are two: (1) the synthesizing of the products of such functioning into seceding systems (not merely sporadic states); (2) with or without such synthesis, the extreme elaboration of the products in specialized directions. Popularly this dual difficulty appears in the willingness to admit that absent-mindedness, dreaming, and simple suggestion are amply accounted for by a normally related conception[1]

[1] The most baffling group of subconscious facilities of a clearly normal type are the operations of arithmetical prodigies and related proficiencies. The determination of the status of these is a definite obligation which psychology has not yet met. There are beginnings and a few notable analyses; in the main, the results seemed to me so unsatisfactory that I was reluctantly compelled to all but omit them from my survey. I believe that in suitable cases the application of the methods used in cases of shifting personality, to the procedures in calculating prodigies, will reveal a more intimate insight into the subconscious facilitating steps, and that these will conform to the general conception here advanced. The investigation seems at all events desirable and promising.

of subconsciousness, but that trance states (like those of Mlle. Helène Smith) and conflicting personalities (like the case of Miss Beauchamp) remain enigmatic. Hence it is well that explanation should be addressed to the rational or imaginative elaboration, and to the "doubling" or rival, seceding, or detached synthesis. The inherent difficulty of each phase lies in its participation in the other. The creative effort in Mlle. Smith's Martian extravaganza astonishes by its appearance as the work of a handicapped phase of her consciousness; the ingenious tantalizings of "Sally" are remarkable because directed against and concealed from another phase of her being. Yet once the dissociated-mindedness be admitted, a further complexity of its application seems no serious obstacle to its admission; and particularly is it to be recognized that this pyschic synthesis can not only draw upon the reservoir of the common consciousness, but as well assimilate in like partial incorporation experiences of its own. The widening detachment (doubling) results accordingly from the capacity of the dissociated consciousness to shape its orientation (not alone its memory resources) by its own contracted model. I have attempted to show that the status thus resulting is of one type or another according (mainly) as the "fault" thus arising is genetic (Miss Beauchamp) or is disintegrating (Mr. Hanna), — the latter the more suggestive of definite physiological variation. In each the demonstrated though gradual and hard-won fusion points to the underlying unity despite temporary psychological (or physiological) barrier, as do also the occasional spontaneous intercourse between one realm and the other and the artificially encouraged *pour parlers* upon a neutral ground. In fine, the added complication of these admittedly perplexing embodiments of dissociated functioning do not constitute a warrant for a distinctive hypothesis, but suggest a warranted extension of the conception of dissociation as applied to more common and regular phenomena. That the conception of dissociation must be shaped to include these is obvious; and the chief importance of further data lies in the hope that they may render more precise and explicit the connotation of that uniquely significant term in modern psychology.

While pleading for the regulative value of normal psychological conceptions for the study of abnormal psychology, I am as ready to derive from the latter pertinent applications to the former, in theory and practice alike. The dictum that the grosser and more pronounced abnormalities are but common deficiencies writ large works both ways. The frequent existence of restraining and impeding influences of a subconscious order in normal individuals follows directly from the central position. The release of these by appropriate mental therapeutics is thus justified as practical procedure by reference to the analyses and again to the practical results in pronounced and wayward hysteria and in genetic and disintegrating lapses of personality. In such justification lies a legitimate phase of popular and professional interest in the conception of the subconscious. Here as elsewhere, wise practice will wait upon sound theory.

REVIEW

TEXT-BOOK OF PSYCHIATRY. *By Dr. E. Mendel, A. O. Professor in the University of Berlin. Translated and edited by William C. Krauss, M.D. F. A. Davis Company, Philadelphia,* 1907, *pp.* 311.

This work might be described as a manual rather than a text-book. It is a nearly complete collection of the data of the science of psychiatry, made by a master of the subject. It is too condensed in form to be attractive or useful to medical students. For the student of psychiatry it should prove a most valuable work of reference. The matter is arranged in beautiful order and it is doubtful if it would be possible to have crowded more information within the same number of pages.

While the author recognizes the work of Kraepelin, the classification of mental diseases is his own. He has shown much wisdom in avoiding any novel departures in this vexing and baffling field.

The author's able conservatism is manifest in handling the many-mooted questions of the subject. Perhaps nowhere is it more evident than when he says "one should be very careful in

making a prognosis of mental diseases." The editor has made his largest amendment in the chapter on the stigmata of degeneration. The author has been very cautious in drawing conclusions on this subject, and he warns the reader against drawing hasty deductions. The author recognizes the failure of the moral sense in various forms of mental disease, but he is unwilling to concede that the existence of moral defect unaccompanied with other discoverable mental weakness, makes a *patient*. Such a person he would call a *criminal*. His description and analysis of the various forms of dispomania is especially good. It is interesting to notice that he disposes of the old "puerperal insanity" as not found clinically as a peculiar psychosis. He has found most of such cases of the confusional type or the *delirium hallucinatorium*, as he calls it. The paternalism of the German government is well illustrated by the Prussian law of 1900, which wisely attempts to prevent what is so difficult to cure. By this law the children of insane parents, under certain conditions, may be brought up away from the parental influence which is admittedly so injurious.

It seems unfortunate that the older use of the word "mania" should occur in so modern a treatise; *e.g.*, we find "systematized mania," "paralytic mania," and "the quantity of the idea makes it a mania." To our surprise, morphine is mentioned as a hypnotic, and the same drug in large doses is recommended as a remedy for the unrest and anxiety of melancholia. It is unfortunate in a book of this character, containing so many nuggets of wisdom, that there is not a more complete index.

EDWARD B. LANE

BOOKS RECEIVED

Organic and Functional Nervous Diseases, by M. Allen Starr, M.D., Ph.D., LL.D., Sc.D. With two hundred and eighty-two engravings in the text and twenty-six plates in colors and monochrome. Cloth. Pp. 798. New York and Philadelphia. Lea Brothers & Co., 1907.

Esquisse d'une sociologie, by E. Waxweiler, Fascicule 2, des Notes et Memoires. Cloth Pp. 306. Misch et Thron. Bruxelles et Leipzig., 1906.

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A FURTHER STUDY OF ASSOCIATION NEUROSES

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THE importance of processes of association in the evolution and maintenance of normal mental life has long been recognized; the laws according to which they are presumed to take place have been formulated, and they have become, as everyone knows, the nucleus of a once fashionable philosophy. But, notwithstanding the fact of its universal recognition, the principle of association has not often been carried to its logical conclusion, in so far, at least, as its application to pathological phenomena is concerned. Such a condition has been due, perhaps, to the regrettable division both of labor and of point of view, which has hitherto separated psychologists and physicians, and which may be credited with a twofold result,— that psychologists are rarely physicians and physicians not often psychologists. To Morton Prince we owe the first recognition of the rôle of association in the genesis of abnormal nervous phenomena; and in his original communication he has pointed out the very great practical importance of such recognition. It is the purpose of the present paper to present some cases, further illustrating the association neurosis, and to discuss in somewhat brief detail the psychological principles which underlie it.

By way of preface it may be well to state that the term "association neurosis," is not meant to imply in any sense a disease entity, nor even a disease form; — indeed it implies no disease at all, being merely a convenient descriptive

phrase intended to explain the mechanism by which certain functional nervous troubles are thought to arise. There may be, therefore, as many types of the neurosis as there are possibilities of abnormal association. In conditions which go by other names, many of the most strikingly disagreeable symptoms may be, and I believe, often are, manifestations of a pure association neurosis. This is true, for example, in psychasthenia, neurasthenia, hysteria, the traumatic neuroses, some forms of dyspepsia, insomnia, certain varieties of so-called nervous diarrhoea, many conditions characterized by morbid fear, and several of the tics. The neurosis is, therefore, to be looked upon not as a disease, nor even as a condition *sui generis*, but rather as a descriptive term for a functional variation; and it may consequently appear as playing itself the leading rôle or, what is of equal import, as enacting a more or less conspicuous part in a larger nervous drama.

Another point worthy of note is this: — Although association was originally invoked as an explanation of the occurrence of certain *ideas* in sequence, logically the principle should not stop here, but should be extended to include sensations, emotions and even purely organic physiological reactions, as will appear in the cases subsequently to be described. For the purpose of scientific completeness, as well as of practical usefulness, we should apply the principle of association to ideas, emotions, sensations and other physiological reactions, whether these be what we are accustomed to call normal or abnormal, and we may describe it thus: ideas, sensations, emotions and organic physiological processes which constantly occur together, tend by their repetition to become associated, and to produce within the nervous system certain psycho-physical dispositions, so that the presence of one serves to excite the other.

If now we approach the subject from the genetic point of view, we may inquire how it is, and why it is, that of the myriad associations of everyday life, some are normal and others as obviously abnormal in their character and content. Here it is quite essential as a preliminary to clear thinking, to explain the precise meaning, so far as this discussion is concerned, attaching to the words "normal"

and "abnormal." What is a "normal" and what an "abnormal" association? When there is question of organic processes the distinction would seem to be easy enough and need not detain us. There is no special practical difficulty about a tumor or an inflammation; we describe both as being abnormal. But when we approach the psychic domain, we must be careful lest we fall into the very facile error of picture-thinking; we must not attempt to transfer our images of organic processes to a sphere wherein they are no longer valid. It is not accurate,— more than that, it is altogether erroneous to speak of normal and abnormal mental associations in the same sense that we speak of normal and abnormal physical processes; for abnormal mental associations are apparently governed by the same laws of genesis and of maintenance as are applicable to those which we regard as normal. Wherein then must we seek the difference? In this, namely, that those associations are usually regarded as normal whose existence in our present environment is useful and whose accompaniment in consciousness is pleasurable; and conversely, those associations are looked upon as abnormal, whose existence in our present environment is useless or harmful, and whose accompaniment in consciousness is disagreeable or painful.

The one is not different from the other in the laws of its evolution or in the nature of the elements which go to form its content, for both are fashioned out of the same elementary psycho-physical material. The difference, hence what are we accustomed to call the normality or the abnormality of the process is to be sought, first, in the type of the association, in the manner in which these elementary units are combined; and secondly, in the effect such association produces in consciousnes, that is to say, in the emotional coloring of its psychic appeal. We may partially illustrate our meaning by assuming that with the same color and kind of threads, one artisan will construct a fabric which is pleasant to look upon, while another will contrive a fabric esthetically displeasing; or drawing an analogy from chemical science, we know that not infrequently substances of the same elementary composition possesses different physical and chemical properties, — the phenome-

non of isomerism. In the mental world the same thing seems to occur in association neuroses, and we may perhaps within limits, be permitted to speak of a psychic iso-merism. Again we may instance the ordinary conscious tone of the association between a rose and the senses of sight and smell, which is a pleasant sensation of fragrance; but for certain neurotic persons a similar act of sight and smell as regards a rose may eventuate in a disagreeable complex of symptoms, — namely, rose cold or hay fever, and so with precisely the same elements we have produced a normal and an abnormal association in the sense we have explained above. The essence of the association neurosis consists therefore in the disagreeable feeling or emotional tone of the mental response, and we may formulate a working definition as follows: A condition in which the anatomical processes are similar in kind to those which occur in health, which makes use of the natural working or functioning of the system and is the expression of normal physiological laws, but differs from the norm in that the functioning is an undesirable or a disagreeable response to the environment (or internal stimuli) instead of a desirable or agreeable one.[1]

Proceeding another step in our analysis we will observe that in respect of their content, these abnormal associations may be represented by the conjunction of two mental states, two organic physiological processes, or a mental state with one or more organic physiological processes, and hence their effect in consciousness will be a disagreeable idea, sensation or movement (muscular, vaso-motor or secreto-motor) either separately or in combination. We may accordingly speak of an asscoiation psychosis and of sensory and of motor association neuroses, including in these last muscular, vaso-motor and secreto-motor responses.

The formation of associations, whether normal or abnormal has its efficient cause in habit. Now habit, as Aristotle long ago pointed out, is formed gradually and is the result not of an inborn tendency of the individual to the act, but rather of an acquired disposition consequent upon frequent repetition. Habits whether good or bad, normal or abnormal, physical or mental, pleasant or un-

[1] Prince, "Association Neuroses," *Jour. of Nervous and Mental Diseases*, May, 1891.

pleasant, have in every instance their origin in the repetition of an act. And just as in nature things follow one another, so it is with acts of the mind and nervous system; what is frequently repeated becomes a second nature, in other words, a habit, an association. The plasticity, and in a sense, the instability of the nervous system is at the root of habit, and therefore we may understand how habits or associations arise from education, whether this be physiological or pathological, the result of imitation, of suggestion or persuasion, or of disease. In physiological language we may postulate the process to consist in the formation of functionally related centers, systems and communities of neuroses, the permanency of which is in direct proportion to the frequency and duration of their associative activity. Thus originates a more or less automatic mechanism, of such a nature that given one element of the association, the others follow naturally and as a matter of course. There is here an approach toward reflex action, which is difficult of inhibition, stereotyped and deep-seated organically. It is because of this characteristic that association neuroses are often exceedingly difficult of cure.

If now we pass from the formation, which is largely the result of habit operative under certain conditions of environment, to the subsequent excitation of any association neurosis, an important point to observe is what I may call the law of transformation or substitution of stimulus. When once the neural processes or psychological dispositions of a given association have been definitely established, this automatism may at any future time be set in motion not only by the original exciting cause, but also,— what frequently happens,— by any other of the elements which were essentially or accidentally associated with it. The principle is important because it explains why certain neuroses persist long after the disappearance of the cause which originally brought them forth. It is as though a charge of dynamite could be set off by lighting any one of several fuses leading to it. A curious instance of this substitution of stimulus is given by Dr. Kellog,[1] who records the case of a friend of his who informed him that he had frequently

[1] Quoted by Tuke. *Influence of Mind upon Body*, pp. 46, 47.

sailed when a young man, in a steamboat across an arm of the sea which was rough, and in consequence often suffered from seasickness. Upon the boat was an old blind fiddler who did his best to alleviate the sufferings of the passengers with his violin. The result was that this instrument became associated in his mind with seasickness, and for years he could never hear it without experiencing sensations of nausea, — or a sort of *mal de mer*. Here we have the auditory stimulus, the sound of the violin, substituted for the original exciting cause, the motion of the ship. The number of substitutions that may occur is, of course, unlimited, and observation has taught us in what complex and varied, often bizarre ways, ideas, emotions and feelings may perpetuate abnormal psycho-physiological activity.

Among the most prominent of these perpetuating factors is the mental state of the patient as represented by fear. I do not now refer to those cases in which fear is present as a disturbing emotion without the memories, now become sub-conscious, which caused its birth, but rather to those common instances where both the fear and its causes are present to consciousness. Fear, regarded from its teleological aspect, seems to serve for the protection of the organism against those numberless influences which are dangerous to its existence and growth. Those who fear aright survive.[1] But in certain association neuroses it is precisely this "fearing aright," which is absent, and in its place we find a type of "fearing awrong," which is illogical, being based upon premises which are fallacious. It is the bad logic of these patients that causes their difficulty. I have at present a neurasthenic person who is a perfect clinical museum of abnormal associations and morbid fears. One of his symptoms has been belching of gas and palpitation after eating, for no reason that I can discover, except that he feared he should have these things, because in his view of it, his "nervous dyspepsia" was of a serious character. His "gas" was merely swallowed air, as one might determine with ease by watching him. With considerable difficulty he was persuaded that he could control his "gas" by the simple expedient of breathing through

[1] Cf. G. Stanley Hall, *Adolescence*, Vol. II, p. 370.

his open mouth, and gradually his condition improved. Everything went along very nicely until one day after his return from dinner, a friend who worked beside him, remarked upon the improvement in his former belching. This was enough. Immediately the patient began to fear that his condition was, as he expressed it to me, "too good to last," — and shortly he was attacked with "gas" which troubled him more or less the remainder of the day. This is but one of many examples that might be selected to show the influence of the patient's mental state, his point of view upon the production and continuance of abnormal associations.

And this point of view, needless to say, always puts the worst construction upon everything, for the obvious reason that it is only the serious things he fears, and has been taught to fear, as the result of his education in lay medicine, which means for the most part the pernicious advertisements of the daily press.[1]

It would be merely curious, were it not often so tragically serious to many, to observe how pain in the stomach means cancer; pain in the abdomen appendicitis; pain in the back, Bright's disease; pain in the head an impending softening of the brain, or the signal of an approaching "stroke"; palpitation of the heart, organic cardiac disease, and so forth, it never having occurred to the patient that any other explanation was probable or even possible.

The practical deduction from this is manifest, — though how often do we forget it, — the absolute necessity of altering the mental state as a preliminary to, and a part of successful therapeusis. Our ailments, psychologically at any rate, *are* what we *believe* them to be, and thus may morbid fear make cowards of us all. It should be the constant endeavor of the physician to substitute a right conception of the affection for the distorted beliefs of his patient. It is often a difficult, indeed many times a seemingly hopeless task, but quite indispensable. Carefully to explain the nature of an association neurosis is many times to dissolve it, and this is the "assuring influence of gentle argument," of which Boethius speaks.[2]

[1] In the crusade against patent nostrums, this psychological aspect of the subject has not received the attention its seriousness deserves.

[2] De Consolatione Philosophiae.

Not merely in association neuroses, strictly so-called, but also in neurasthenia where abnormal associations are so frequent, is this persuasion of value. For the more we observe these cases, the more profoundly we seek to penetrate beneath the surface, the more surely, as I have elsewhere attempted to show,[1] will we be led to conclude that in neurasthenia, aside from its physical substratum, we are face to face with a perturbation of personality, — a condition of psychological instability, whose outward and visible sign is the neurasthenic symptom-complex. Such being the case explanation and persuasion act as integrating, synthetizing forces, propping up and making vertebrate the unstable character. In this way, many times, we may prevent the development of abnormal associations.

So much for the psychological principles which would seem to underlie the association neuroses. The cases which follow illustrate associations formed in the personal consciousness, as distinguished from those others which work themselves out as sub-conscious phenomena, and which may properly be called dissociation neuroses.

Case I. — Mr. M., a clergyman, came to consult me for a very obstinate insomnia which had proved rebellious to all the usual hypnotic drugs. He was thirty-two years of age, and his temperament was what may be called obsessional. For several months his nervous condition had been distinctly neurasthenic and he had become overscrupulous in the performance of his usual duties. One morning, after a fair night's sleep, he awoke at four o'clock, looked at his watch, and immediately there flashed across his mind the memory of a previous occasion, years ago, when as a theological student, he had gone through a period of some months during which it was impossible for him to sleep after four a.m. Instantly the fear arose that he was about to repeat his former experience, and during the following day his mind constantly reverted to this fear. Upon his retiring the next night, he felt certain that he could not sleep after four o'clock, and sure enough, he awoke, looked at his watch and found the time to be ten minutes after four. This fact confirmed his belief that his fear was well

[1] On Neurasthenia as a Disintegration of Personality, *Jour. of Abnormal Psychology*. Vol. I, No. 2.

founded, and for three months he has been unable, at his present residence, to sleep after four o'clock. If, however, he visits the house of a friend or spends an evening at his own home, he sleeps as well and as long as he ever did in his life. But as soon as he returns to his former environment his wakefulness returns and no drug, of which several have been used, has been able to overcome his difficulty.

Here we have a peculiar variety of insomnia, or rather wakefulness, produced by a purely emotional condition, — the psychic state of fear. The patient's waking at four o'clock on the first morning was purely accidental, and had it been six o'clock, or had he not looked at his watch, he probably would have had no trouble whatever. But the coincidence of time between his present experience and the sudden revival in memory of a past disagreeable experience served to give birth to the fear of the repetition of the former troublesome waking. Thereafter, upon retiring, his mental state was equivalent to the auto-suggestion, — "I shall wake at four o'clock." It would seem to be the same psychological process by which so many persons are able to awake at any hour they please simply by wishing to do so before they fall asleep. In the present instance, although the cause of his waking was explained to him, still he was quite unable to overcome the auto-suggestion and was ultimately compelled to change his residence.[1]

Case II. — Miss X., a young woman, complained of so-called nervous diarrhoea whenever she undertook to enter upon any social duty requiring her to leave her own home, and for this reason, although otherwise in good health, she had become practically a prisoner. Careful inquiry discovered her trouble to be of purely psychic origin and its evolution as follows: Four years ago she underwent at the hands of a capable surgeon an operation for hemorrhoids. Her convalescence presented nothing unusual, but somehow or other, probably upon a basis of a slight knowledge of physiology, she began to think that the sphincter of her rectum had been cut and that therefore she was doomed to

[1] Since the above was written, this patient reports that since his change of abode, he has had no insomnia whatever.

the "pitiable condition of being unable to control her bowels." For this reason she became fearful of accident should she venture out, and on two or three occasions, when she did so, she actually was compelled to seek safety in the house of friends, so apprehensive had she become of her condition. While at home the habitual state of her bowels was one of constipation and required the use of laxatives, but immediately she attempted to go out, the diarrhoeal condition supervened.

It was not difficult to see that this patient was the victim of an abnormal association between a mental state and a physiological process, an association which was abnormal simply because it was *mal apropos*. But to realize it oneself, and to convince her of it, proved to be two different things. She simply could not believe such a thing to be possible, and even accused me of being contaminated with Christian science. After several seances of argument, however, she was won over to my point of view, to the extent at least, of accepting the probable psychic origin of her trouble. Continuous persuasion induced her ultimately to venture upon a social call, which she did with a certain misgiving, but with no actual bad results. Having re-assured herself in this way, she became gradually bereft of her fear, and her recovery, so far as I know, has been complete.

Case III. — Mr. C., a clergyman and an author of distinction, was afflicted with a very disabling periodic aphonia, with which he had suffered for something over ten years. The original cause of his difficulty had been an attack of acute laryngitis which rendered him suddenly voiceless one Sunday while he was in the pulpit preaching to a large congregation. Although the laryngitis recovered in due time, his aphonia continued to affect him when he attempted to preach from the pulpit before a congregation. He could, however, rehearse his sermon from the same pulpit in an empty church without difficulty. Furthermore, he could preach absolutely without aphonia when he felt assured that whenever he had an assistant he would not be compelled to attempt preaching, should his voice trouble him. But on such occasions it never did. His liver had

been treated at Carlsbad and his spleen in America since both of them had been blamed, but his aphonia continued as before. During conversation with him it was noticeable that when he was interested, his voice, which was deep bass, would become quite natural, but when his attention was called to the fact of his natural speaking, immediately he would become temporarily aphonic and his voice would change to a husky whisper. Upon examination, there was nothing abnormal to be found in his larynx, heart, lungs, liver, spleen or any other organ of his body.

This interesting case seemed to be an example of an abnormal association, — an instructive instance of the fear-neurosis. The fixed idea of helplessness when alone, and the fear that he would break down in his sermons, actually rendered this otherwise healthy man unable to preach. The following letter shows rather naively the influence of fear in the causation of his aphonia.

My dear Dr. Donley: —

You were most helpful in your advice, and I want to tell you how much I owe to you. At present I do not think it is necessary to repeat these visits, for I have a clerical helper and things are running smoothly. It is all so strange and freaky. Yesterday I engaged a clergyman to preach for me and at the last moment sailed in and preached myself. But if I had not known he was coming I would have been on end. When I prepare for a service, I make a botch of it; when I take it on the sly, it goes all right. You will pardon an ignorant layman in medicine in making one foolish criticism upon your fear-neurosis theory. If, for instance, you were a trapeze jumper, and had a broken leg, you would naturally fear every time you went up the rope ladder to make your dangerous plunge. Well, having a broken-winded voice, it is natural I should be afraid every time there is a public performance, and all the arguing cannot down the fear until the voice is mended or the leg of the trapeze jumper is straightened out. However, I have had a faint glimmer of something of my old-time self. The fog has lifted a wee bit.[1] Very sincerely,

[1] Having given up psychotherapy, this patient, left to himself, very shortly relapsed.

Case IV. — Mr. K., aged 28, had for two or three years worked laboriously at his daily occupation, smoking pretty much all day long. At night he devoted most of his time to practice upon the violin, to which he was devoted. He ate irregularly and too much, combining with overeating the abuse of tea and particularly of coffee. These factors acting upon a hereditarily unstable nervous system eventuated as follows: One night, while the patient was kneeling by the side of his bed saying his evening prayers, the room being dark, there suddenly appeared upon the bed covering a light which he describes as seeming like a star with a bright nucleus and beams of light radiating around it, the whole being about the size of a quarter dollar. The light remained so long as he was engaged in prayer, but even during that time would disappear if he closed his eyes, reappearing again when he opened them and looked fixedly at the spot upon the bed cover. At work during the day he saw nothing unusual, unless with his thoughts intent upon the previous night's experience, he looked steadily into space, when the light would reappear. This state of affairs continued over six weeks, when gradually the light became less frequent in its appearance, and under continued treatment it disappeared entirely, coincident with improvement in his general health and habits, and an altered mental point of view.

In this case the appearance of the light during prayer was interpreted by the patient as being "God's Light," and possibly a call from Divinity to engage in a religious life. In fact he actually consulted a clergyman as to the meaning of his vision. The latter, a man of practical common sense, informed him that it was not "God's Light" at all, but a case of "nerves," requiring the attention of a physician. Since the light appeared only when he was praying, he was directed to go to bed without saying prayers, but even when the primary excitant of the association, namely, praying, had been removed, the general environment of time and place was sufficient to arouse the hallucination occasionally for some weeks longer. With the idea of a Divine message removed from his mind, and the conception of disordered nerves firmly implanted there, a gradual improvement in

general health was accompanied by the ultimate complete disappearance of the hallucination.

Case V. — Miss K., aged 32, has for some seven years been afflicted with severe migraine, the attacks recurring about every two weeks. During one of her attacks she drank some cold water contained in a glass and immediately thereafter vomited. It should be explained in passing, that previously she had never suffered any gastric disturbance during her migrainous attacks. Since the time of her first vomiting spell, the mere sight of water in a glass during her paroxysm, is sufficient to cause moderately severe nausea. Water in any other vessel has no effect upon her whatever.

In this curious case there has been formed an abnormal association which has resisted all efforts to overcome it, although the value of hypnosis has not, as yet, been determined.

A SYMPOSIUM ON THE SUBCONSCIOUS

IV

BY PIERRE JANET[1]

Professor of Psychology, Collège de France

My dear Dr. Prince:

YOU have set me quite a difficult task and one which I hardly feel capable of accomplishing to your entire satisfaction. You ask me to take a stand with regard to the metaphysical theories which are developing today and which seem to have for their point of departure the study of phenomena formerly described by me under the name of the "Subconscious." These studies, already old, since I published them between the years 1886 and 1889, do not permit me to take part in this serious quarrel; they have a much more restricted and much less ambitious range. While the researches of the present day, whether they have a spiritualistic or a materialistic tendency, attain to the summit of the highest metaphysics, my old studies, very modest as they were, simply endeavored to throw light upon, describe and classify certain phenomena of pathological psychology.

Disturbances of the notion of personality are freely met with in psychiatric studies. One finds not only disturbances in the conception which patients make of their own person, when they pretend to be a king or an animal, but also one very often meets with curious alterations in the assimilation, the incorporation of such and such a phenomenon with that feeling they have of their own person. Indeed, it is undeniable that there takes place in us a certain classing of psychologic phenomena; some are attached to the group of the phenomena of the outside world, others are grouped about the idea of our person. This idea, whether exact or not, which is probably in a great measure a product of our social education, becomes a center about which we range certain

[1]Translation by Dr. J. W. Courtney, membre correspondant etranger de la Societe de Neurologie de Paris.

facts, while others are placed outside of ourselves. Without discussing the value and the nature of this distribution as it is brought about in the practically normal mind, I state simply the fact that certain patients attach badly to their personality certain phenomena, while others do not hesitate to consider the same facts as entirely personal.

In the delirium of typhoid fever one of my patients used to say to me: "Just think of my poor husband who has such a frightful headache; see how my children suffer in their stomachs, somebody is opening their abdomen." She attributed to other people the sensations of suffering which ordinarily we do not hesitate to attribute to ourselves. One meets much more often still with a somewhat different illusion in that large class of patients which I have described under the name of "psychasthenics;" many of them repeat incessantly such remarks as, "It is not I who feel, it is not I who eat, it is not I who speak, it is not I who suffer, it is not I who sleep; I am dead and it is not I who see clearly," etc.[1]

It is easy to determine that in these patients their movements are correct, their diverse sensations are correctly conserved, even their kinaesthetic and visceral sensations; but the subject nevertheless declares that he does not attach them to his personality; as far as he may he acts as if he did not have them at the disposition of his person. A patient of this sort, recently described by Séglas, declared that he had no memory and acted as far as possible as if he had really lost all memory, although it was easy to prove that he had in reality forgotten nothing.[2] The apparent trouble of memory just as the apparent antecedent trouble of sensation and movement was nothing more than a disturbance in the development of the idea and the feeling of the personality.

Among these psychasthenics the disturbance of the personality is not total. It is clearly manifest in certain mental operations which may aptly be called superior,—that is to say, in the judgment of recognition by which the attention

[1] Nevroses et idees fixes, 1898, II, p. 62; Obsessions et psychasthenie, 1903, I, pp. 28 et 307, II, p. 40, 351.

[2] Journal de psychologie normale et pathologique, March, 1907, p. 97.

attaches the new mental content to the old, in language with reflection and in voluntary action. But elementary operations of the personality seem to be preserved; consciousness, that act by which a multiplicity and diversity of states is attached to a unity, seems to survive. The subject declares that it is not he who remembers this or that act, that it is not he who sees this or that tree, but he remembers it nevertheless and continues to see it. At least it is manifest to us that his mind continues to see the tree, since he describes the changes which take place in it and tells us: "The tree is green, its leaves flutter, but it is not I who see it." The disturbance of the personal perception appears not to be profound.

This incomplete character of the disturbances of the personality is found in all the accidents of these psychasthenic patients; they have obsessions but are not completely insane and always recognize the absurdity of their obsessing ideas; they have impulses but do not carry them out; they have phobias concerning acts but never real inability to perform acts, or real paralyses; they have interminable doubts but no true amnesias. It is the striking trait of their character that they never have any symptom in its completeness, and this incomplete character of the disturbances of their personality falls within a general law.

Now there is another psychosis, all the symptoms of which might easily be put in a parallel column with those of psychasthenics, and that is hysteria. This mental disease has for its essential characteristic exaggeration, the carrying to an extreme of all preceding symptoms. Instead of the preceding obsessions with doubt, there are in the monoideistic somnambulism of hysterics fixed ideas which develop to the most extreme degree, with complete hallucinations and impulses; in place of doubt there is true amnesia; in place of phobias we meet with complete paralyses. It is, therefore, interesting to see the form which the trouble of the personality, just described as incomplete in the previously mentioned disease, will take in hysteria.

Doubtless certain hysterics at times express, with regard to certain sensations, judgments analogous to those of psychasthenics.

A patient formerly cited by Professor James used to say: "My arm is no longer a part of me, it is foreign to me, it is an old stump." This, however, is rather exceptional and most commonly one meets with a different order of facts. In the wake of certain crises in which fixed ideas have developed superabundantly and completely in the form of feelings, acts and hallucinations, which we have called mono-ideistic somnambulisms, the patient acts as if he were completely ignorant of what has taken place; he does not doubt his memories, he does not declare them foreign to his person; he does not speak of them at all, he ignores them. The same subject has both legs paralyzed for certain periods of time, and yet he does not merely say that it is not he who walks, he does not walk at all. If one pricks or pinches his motionless legs, he does not merely say that the sensation is foreign to him, that it no longer belongs to him, that it is not he who feels; he says nothing at all, for he does not seem to feel it in any way. The loss which the personality suffers, the alienation of the phemonena seems to be more complete than in the preceding case. Shall we say, however, that the cases are in nowise comparable?

The psychasthenic still retained his memories, his voluntary acts, his sensations. It is true that he said, "It is not I who remember, I who move and feel," but he proved that he did feel by describing correctly objects placed before him.

In the hysteric these psychologic phenomena are merely suppressed, it is quite another disease, and that is exactly what I formerly tried to show, although in opposition to the opinion current at that time. With a little more precaution than is necessary with the psychasthenic but in the same way, by more carefully avoiding attracting attention of the patient to the expression of these phenomena, one may demonstrate perfectly their existence in as complete a form as in the so-called normal individual. Take the case of a young girl of twenty years who in her somnambulistic periods indulges in *fugues* of several days' duration, far from the paternal roof. After her *fugues* she appears to have lost completely all memory of them, although she seems incapable of telling you why she went away or where she

went. Under distraction and while she was thinking of something else, I put a pencil in her right hand and she wrote me the following letter apparently without cognizance of what she was doing.—"I left home because mamma accuses me of having a lover and it is not true. I cannot live with her any longer. I sold my jewels to pay my railroad fare. I took such and such a train," etc. In this letter she relates her entire *fugue* with precision although she continues to contend that she remembers nothing about it. Another case, that of a man who seemed to have both legs paralyzed, rapidly traverses roofs during a somnambulism and even during the waking state makes with his limbs any movements one desires, if such movements are called for under favorable conditions. These people who seem not to see clearly or not to feel anything in their hands, describe to you in a subsequent somnambulism or by means of the writing of which I have just spoken, or by still other methods, all the details of objects placed before their eyes or brought in contact with their hands. Are we not obliged to conclude as in the preceding case, that sensations are really conserved, although the subject tells us that he does not feel them? These are interesting though perfectly commonplace clinical phenomena, since it is easy to see that all hysterical accidents are fashioned on the same model. They are analogous to the depersonalizations of psychasthenics, but they are not identical with them. I tried to sum them up under the word "subconscious," which, from my point of view, simply designates this new form of the disease of the personality.

Since the time when I first began to employ the word "subconscious," in this purely clinical and somewhat prosaic sense, I must admit that other authors have employed the same word in a sense infinitely more ambitious. The word has been used to designate marvelous activities which exist, so it appears, within ourselves without our even suspecting their existence, and which become the source of our virtues, of our enthusiasms and of the divination of genius. This recalls that amusing saying of Hartmann: "Let us not despair at having a mind so practical and so lowly, so unpoetical and so little spiritual; there is within the innermost sanctuary of each of us, a marvelous something of which

we are unconscious, which dreams and prays while we labor to earn our daily bread." I intentionally avoid discussing theories so consoling and perhaps true withal; I simply remind myself that I have something quite different to do. The poor patients whom I studied had no genius; the phenomena which had become subconscious with them were very simple phenomena, such as among other men are a part of their personal consciousness and excite no wonder. They had lost the power to will and the knowledge of self; they had a disease of the personality, nothing more.

In connection with these same facts and in making use of the same word, their theories have touched the great problem of the connections between soul and body, between thought and brain. Are cerebral phenomena always accompanied by psychologic phenomena? When psychologic phenomena diminish, when they are reduced to their simplest expression do they not tend to disappear, and may not one then say that nervous phenomena subsist alone? May not certain coordinate movements which are but ill perceived by patients during their convulsions, and in choreas, be attributed to simple cerebral phenomena without interjecting the notion of psychologic phenomena? If we were really determined to baptize these physiologic phenomena without thought of the name subconscious, might we not on account of the analogy of the name say that all the phenomena of somnambulism or of automatic writing is easily explainable "by phosphorescent shadows which flit across certain centers of the cerebral cortex"!

Far be it from me to discuss these fine theories which seduce certain minds by their scientific appearance, and which after all do probably contain some truth. I am content to remark, that that is quite another problem. Doubtless the question of the connections between thought and brain may be discussed with regard to somnambulism as well as with regard to nearly every fact of normal life, but in my opinion there is no good reason why this great problem should be particularly raised in this connection. The assimilation of the conduct of the somnambulist, of the execution of the suggestion, of a page of automatic writing, with incoördinate convulsive movements is pure childish-

ness. These diverse acts are identical with those which we are accustomed to observe in persons like ourselves and to explain by the intervention of the intelligence. Undoubtedly one may say that a somnambulist is only a mechanical doll, but then we must say the same of every creature. These are useless reveries. In our ignorance, we simply know that certain complex facts, like an intelligent reply to a question, depend upon two things which we believe associated; superior cerebral mechanism and a phenomenon which we call an effect of consciousness. We find the same characteristics in the so-called subconscious phenomena, and we must suppose back of them the same two conditions. To be able to affirm anything else we should need to possess precise knowledge concerning the expression of superior or inferior phenomena of cerebral activity, concerning the loss of the association of consciousness with cerebral phenomena, knowledge which we positively do not possess. Certainly it ought not to be with regard to half understood symptoms of a mental disease that we should try to resolve these great problems of metaphysics. In my opinion, we have got other psychologic and clinical problems to resolve concerning the subconscious without embarrassing ourselves with these speculations. You see that I am today more occupied than formerly with the relations which exist between the depersonalization of psychasthenics and the subconsciousness of hysterics. We must study the intermediate types which are met with much oftener than I had thought. It is necessary to determine if certain characteristics of the one disease are not found in the other. Does not the hysteric herself possess a sort of insane belief which makes her relinquish certain phenomena? Up to what point is she sincere in her declarations of ignorance? Does she not to a certain extent deceive herself? By what steps does she arrive at the complete separation of phenomena which seem to exist in certain cases? Do the psychologic phenomena thus dissociated always retain their properties, are they not more or less transformed? The same problem presents itself in connection with the muscular phenomena, for in the hysterical contracture it does not seem to me exact to say that the muscular contraction remains absolutely what it was in

normal movements. There are many other clinical problems of great importance which it seems to me must be studied. None of these researches can be made without exact and long continued observations carried on under good conditions, and the very least of them is to my mind more important than all the huge tomes full of speculations put together. It seems to me not difficult to gather from these few reflections the reply to your questions, or, at least, to certain of them.[1]

[1. What do you understand by the "Subconscious?"]

The word "subconscious" is the name given to the particular form which disease of the personality takes in hysteria.

[2. Does "doubling" (Janet) of consciousness ever occur whether normally or pathologically? If not, how would you explain the various so-called subconscious phenomena of abnormal psychology (automatic writing, speech, etc.]?

This word is not a philosophical explanation; it is a simple clinical observation of a common character which these phenomena present.

[3. Does the subconscious always represent or depend upon the doubling of consciousness? If so, must there be a lack of awareness on the part of the personal consciousness for the second dissociated group of ideas?]

There exist all sorts of intermediate pathologic forms between the doubt of the psychasthenic and the subconsciousness of the hysteric.

[4. Is there normally in every individual a second group of co-acting ideas of which the individual is not aware (a so-called secondary consciousness)? If so, are such ideas discreet or systematized?]

It is possible, for all pathologic phenomena have their germ in normal physiology.

[5. If doubling occurs, is it always pathological? If so, how do you explain automatic writing, post-hypnotic phenomena, like unconscious solutions of arithmetical problems and similar phenomena in normal people?]

1 A series of ten questions were sent to each contributor to this symposium, suggesting points on which it was thought desirable to obtain expressions of views and to keep the discussion within certain limits. Professor Janet concludes with answers to eight of these questions. I have interpolated each question in brackets in his article before the answer in order that the latter may be understood.—EDITOR.

Clear-cut phenomena truly comparable to the subconsciousness of hysterics are infinitely rare in the normal mind. When they are really noted by competent observers they must be regarded as unhealthy accidents of a more or less transient character, and in general, as I have always observed, of a somewhat sinister omen.

Furthermore, these discussions of the words health and disease are absolutely puerile and recall the sophism of the Greeks about the bald-headed man. A phenomenon is morbid when it is most often associated with other symptoms of a well recognized disease and when it disappears with the disease. Such indeed is the characteristic feature of somnambulism and of automatic writing, which can no longer be evoked in hysterics when they recover from their disease.

[6. Do you include under the term subconscious all conscious experiences that have been forgotten, and which are capable of being synthesized with the personal consciousness at any given moment regardless of whether the forgotten experiences are co-acting or not (Sidis)? (In this case subconsciousness becomes co-extensive with the forgotten and out of mind.)]

It seems to me difficult to reply to this question when we know so little concerning the form in which our memories are preserved when they are not called forth.

[7. Do you limit the term solely to the conscious states which are in co-activity at any given moment, but of which the subject is not aware?]

The word "subconscious" seems to me rather to apply to this more clearly cut case.

[8. Do you base the conception of the subconscious on the fact of awareness on the part of the individual for certain conscious states, so that there would be different degrees of subconsciousness corresponding to different degrees of awareness? For example, as in absent-mindedness and as represented by the theory of the "fringe of the focus of consciousness."]

There are evidensly relations between all these phenomena, but we must avoid confounding them with one another; analysis compels us to establish some discontinuity between the facts.

So here, my dear Dr. Prince, you have the answers

requested. I fear that they will hardly satisfy your readers. An investigation of this sort does not resolve the problems once and for all; it merely brings the different opinions into competition as they were before. I hope that it may interest at least some few and lead them to psychological observations which will be of lasting utility to science.

With my most sincere regards,

DR. PIERRE JANET

V

BY MORTON PRINCE

Professor of Neurology, Tufts College Medical School

IN the prefatory note to this symposium in the last number of THE JOURNAL (p. 22) six different meanings in which the term "subconscious" is nowadays used were defined. All but the first and fourth of these meanings involve different interpretations of the same observed facts. In a symposium of this kind three of these only need to be considered; namely, those which Professor Münsterberg has so clearly distinguished and explained, as the points of view of the layman, the physician and the theoretical psychologist. As the first of these three hangs upon the validity of the second, we need only take up for discussion the two last. These two offer interpretations of facts which are not in dispute. Let me state over again the problem:

According to the first of these two interpretations (Professor Münsterberg's and my second type), so-called automatic writing and speech, post-hypnotic phenomena like the solution of arithmetical problems and various abnormal phenomena, of the origin of all which the subject is ignorant, are the manifestations of dissociated ideas of which the subject is unaware and which are therefore called subconscious. Thus a "doubling" of consciousness results consisting of the personal self and the subconscious ideas. I prefer myself the term co-conscious to subconscious, partly to express the notion of co-activity of a second co-conscious-

ness, partly to avoid the ambiguity of the conventional term due to its many meanings, and partly because such ideas are not necessarily *sub*-conscious at all; that is, there may be no lack of awareness of them. The co-conscious ideas may be very elementary and consist only of sensations and perceptions which have been split off from the personal consciousness, as in hysterical anesthesiae, or they may consist of recurring memories of past experiences. Under certain conditions by a process of synthesizing these ideas and assimilation of them with a greater or less amount of the personal self, which is thereby attenuated, in its faculties, quite large dissociated systems of subconscious ideas may be formed and give rise to the complicated phenomena for which an interpretation is desired.

According to the opposing hypothesis, all these phenomena are explainable as the manifestations of pure physiological processes unaccompanied by ideas. The apparently intellectual and purposive acts as well as volition and memory are performed by brain processes alone to which no consciousness belongs. Such acts differ only in complexity from such other physiological processes which carry on the digestion and other functions of the body, on the one hand, and the spasmodic jerkings and twitchings, seen in chorea, epilepsy and other abnormal affections, on the other. "Unconscious cerebration," Carpenter called it years ago. Which of these two interpretations is correct? Professor Münsterberg is absolutely right in saying "no fact of abnormal experience can by itself prove that a psychological and not a physiological explanation is needed; it is a philosophical problem which must be settled by principle before the explanation of the special facts begins." The principle is the existence of dissociated subconscious ideas. Are there such things?

With the meaning of this problem well before the mind it becomes manifest that before the fundamental principle of dissociated ideas is definitely established, it is the sheerest waste of time to discuss larger problems, such as the extent of the subconscious symptoms, whether they belong to the normal as well as the abnormal mind, whether they form a "self," a secondary self (third meaning), etc. These and others are important but secondary problems.

Above all is it a wasteful expenditure of intellectual energy to indulge in metaphysical speculations regarding the existence and functions of a mystical subliminal self (Myers), transcending as it does all experience and everything that even a "subconscious self" can experience. The point then which we have to determine at the very beginning of the inquiry is this: Do ideas ever occur outside the synthesis of the personal self-consciousness under any conditions, whether of normal or abnormal life, so that the subject becomes unaware of these? Or, putting the question in the form in which it is prescribed to the experimenter: Do phenomena which appear to be the manifestations of a subconscious intelligence necessitate the postulation of dissociated ideas, or are these phenomena compatible with the interpretation that they are due to pure physiological processes without psychical correlates?

1

The only grounds which I have for believing that my fellow beings have thoughts like myself are that their actions are like my own, exhibit intelligence like my own, and when I ask them they tell me they have consciousness, which as described is like my own. Now, when I observe the so-called automatic actions, I find that they are of a similar character, and when I ask of whatever it is that performs these actions, Whether it is conscious or not? the written or spoken reply is, that it is and that consciously it feels, thinks and wills the actions, etc. The evidence being the same in the one case as in the other, the presumption is that the automatic intelligence is as conscious as the personal intelligence. The alternative interpretation is, not that a physiological process is lying, because lying connotes ideas, but that in some way it is able to rearrange itself and react to another person's ideas expressed through spoken language exactly in the same way that a conscious intelligence lies!

2

The phenomena which occur in the neatest and most

precise form and which, from the fact that they can be induced, modified and examined at will, are best adapted for experimental study, are so called automatic writing and speech. We will therefore take these for examination and see if they ever require the interpretation of a secondary intelligence of a psychical nature.

When automatic writing is produced in its most highly developed form, the subject with absolutely unclouded mind, with all his senses about him is able to orient, think and reason as if nothing unusual is occurring. He may watch with unconcerned curiosity the vagaries of the writing pencil. In other words, he is in possession of his normal waking intelligence. Meanwhile his hand automatically produces perhaps long discourses of diverse content. But he is entirely unaware of what his hand is writing and his first knowledge of its content comes after reading the manuscript. We then have intelligence No. 1 and writing manifestations which may or may not be interpreted as having been produced by a conscious intelligence No. 2. But writing of this sort is not always produced with intelligence No. 1 as alert as this.

On the contrary, often and perhaps most frequently the writer falls into a drowsy condition in which he imperfectly orients his surroundings, and if he is reading aloud according to the common method of conducting the experiment, he is only dimly conscious of what he is reading. This extinguishing of consciousness in intelligence No. 1 may go further and he may not hear when spoken to or feel when touched. He reads on mechanically and without consciousness of the matter he is reading. In other words, he has become deaf and tactually anesthetic and blind to everything but the printed characters on the page before him, and for even these mind-blind. In this state then there is practically extinguishment of all sense perceptions and intellectual thought, and finally the impairment of consciousness may be carried so far that he actually goes to sleep. Ask intelligence No. 2 what has become of No. 1, and the answer may be, "He has gone to sleep."[1]

In other words, intelligence No. 1 has disappeared, but intelligence No. 2 continues.

1 This answer was given by a subject observed while this paper was being prepared.

Now to interpret the automatic writing produced when this great impairment of intelligence No. 1 has taken place as subconscious phenomena and due to subconscious intelligence whether physiological or psychological is to overlook the facts as presented. These are not phenomena of a subconscious intelligence but of an alternating intelligence or personality. The complete suppression of intelligence No. 1 has left but one intelligence, that which had been under other conditions intelligence No. 2. Unless the physiological interpretation be maintained the writing has ceased to be automatic in the sense in which the term was originally used and has become what, for the time being, is the primary intelligence although a different one from that which was originally awake. I say different because if we examine the content of the writing we may find it is made up of memories of past experiences which were entirely forgotten by the original intelligence No. 1 and gives evidence of a personality differing in character, volitions, sentiment, moods and points of view, of a character differing in a large degree from that of the waking intelligence. The writing may be an original composition involving thought and reason comparable to that exhibited by a normal mind. Such compositions are of great interest from the light they throw upon the origin and development of secondary personalities, but with that we have nothing to do here. At present the only interest we have in such compositions is the evidence which they offer for the interpretation of such a personality. That is to say, whether its intelligence is the exhibition of physiological or psychological processes. To arrive at a satisfactory interpretation, we must study the behavior of the personality to its environment. If we speak to it, it answers intelligently in writing, though intelligence No. 1 fails to respond. If we prick the hand, we obtain a similar response and lack of response from intellgence No. 2 and No. 1 respectively, and the same with the other senses. It exhibits spontaneity of thought and its faculties are curtailed in the motor sphere alone in which it retains power only to move the muscles of the arm and hand;[1] but even

[1] By this is not meant that it has the same degree of knowledge and capacity for intellectual thought possessed by the original personality, No. 1, but on that it has all the different *kinds* of intelligence possessed by a normal person.

here in the motor sphere its faculties are not necessarily so limited for it may break out into speech and may exhibit various sporadic movements. It has lost only a general coordinating control over the whole body. In the motor sphere, therefore, its loss is not so great as that which has befallen intelligence No. 1. In fact, we have here a condition very similar to that of some persons in deep hypnosis. The main point is that now we have to do with an alternating intelligence, not a co-intelligence. Is it an alternating *consciousness*?

The next thing to note is that in passing from automatic writing, which is performed while intelligence No. 1 is completely alert, to writing which is performed while this intelligence is completely or nearly extinguished, we pass through insensible gradations from one condition to the other and *we must infer that the intelligence must be the same in kind, physiological or psychological, which produced the writing in the one case as in the other.* If the alternating intelligence in the latter case is psychological, the subconscious intelligence in the former must be the same, for there is no place where we can stop and conclude — here the physiological ends and the psychological begins.

In the alternating intelligence producing automatic writing we have an alternating personality. We have here substantially the same condition that is observed, first, in some hypnotic states; second, trance states; third, "fugues," spontaneous somnambulism and post-epileptic states; fourth a state not very different from normal sleep with dreams, forgotten on waking; and fifth, certain states of deep abstraction. In none of these has there ever been raised the doubt as to the conscious character of the intelligence. All are "alternating" states and some are alternating personalities. In the first group, suggestions requiring conscious intelligence are comprehended, remembered and acted upon; in the second, writing and speech are manifested which can only be interpreted as the product of thought; in the third and fourth, the thoughts and dreams can afterwards be regained by certain technical devices; and in the last the conscious processes are remembered.

3

Let us go further with our experiment and take a case exhibiting automatic writing where intelligence No. 1 remains unimpaired. We hypnotize such a subject. When asked what sort of intelligence it was that did the writing, he replies that he remembers perfectly the thoughts, sensations and the feelings which made up the consciousness of which intelligence No. 1 was not aware and that this consciousness did the writing. Still, it may he maintained that this in itself is not proof but that the hypothesis is permissible, that these memories are sort of hallucinations, and that in hypnosis what were previously physiological processes now have become reawakened and have given rise in the hypnotic synthesis to psychical memories. We shall then have to go further and seek for additional evidence.

4

Automatic writers may be divided into two classes; namely, those who at the moment of writing are entirely unaware of what the hand is writing; and those in whom at the moment of writing ideas corresponding to written words surge apparently from nowhere without logical associative relation into the mind. Mrs. H., for example, is an excellent automatic writer of the second class. At the moment when the pencil writes ideas which it is about to express arise at once in her consciousness so that she is herself in doubt as to whether she writes the sentence volitionally, or whether it is written automatically entirely independently of her will. Sometimes while writing, the ideas come so rapidly that unable to express them with sufficient celerity with the pencil she bursts out into voluble speech. To test her doubt, she is given a pencil and told not to write. Then she finds herself without control of her hand, and, in fact, the pencil writes the more fluently the greater the effort she makes to inhibit it. In the midst of a suitable sentence I hold her hand and restrain the writing, and ask her to complete the sentence by word of mouth, which of course she could do if it was her own intelligence,

that is No. 1, that was doing the writing; but she cannot complete the idea, showing that she does not really know what the hand was about to write.

Again, Mrs. B. in hypnosis is told to write automatically when awake, "three times six are eighteen; four times five are twenty." After being awakened she is given something to read aloud; while reading the hand begins to write as previously directed, but she stops reading saying, that she cannot because the, to her, absurd sums three times six are eighteen, four times five are twenty, keep coming into her head. She cannot understand why she should think of such things.

Now, are we to conclude that the mechanism of automatic writing in the second class of writers differs from that performed by the first class, and that when the writer is *aware* of the automatic thoughts the writing is done by psychical processes, and that when he is *not aware* of any automatic thoughts it is done by physiological processes? In every other respect, in content of writing and in behavior of the automatic personality to the environment, we find the phenomena are the same. It does not seem to me that such an interpretation is justifiable. As I view this question of the subconscious, far too much weight is given to the point of awareness or not awareness of our conscious processes. As a matter of fact we find entirely identical phenomena, that is identical in every respect but one — that of awareness — in which sometimes we are aware of these consicious phenomena and sometimes not; but the one essential and fundamental quality in them is automaticity or independence of the personal consciousness. Doubling and independence of the personal consciousness are therefore the test of the subconscious rather than awareness.

5

In the content of automatic writing we find evidence which it is difficult to reconcile with a physiological interpretation. This was briefly touched upon before. When studied we find that the writing does not consist of words, phrases and paragraphs which might be mere repetitions

or memories whether physiological or psychical, of previous experiences, but even consist of elaborate original compositions. Sometimes in Mrs. Verrall's writings they consisted of original Latin or Greek compositions.[1] Sometimes, as in those who are inclined to a spiritistic interpretation, of fanciful fairy-tale-like fabrications. Sometimes they exhibit mathematical reasoning shown by the solution of arithmetical problems. Sometimes they consist of ingeniously fabricated explanations in answer to questions. Sometimes they indicate a personal character with varying moods and temperaments. Feeling and emotion whether of anger, hatred or malice, kindness or amiability are often manifested. If such a document were presented as testamentary evidence in the ordinary course of human affairs, it would seem as if the burden of proof would lie with him who would insist upon interpreting it as without psychological meaning and as only the expression of a physiological activity of the nervous system without thought.

6

Suggestions in hypnosis may result in post-hypnotic phenomena, which are manifestations of an intelligence which may be of a kind which cannot possibly be explained by physiological *habits*, as it exhibits logical readjustment of ideas of a high order; for instance, complex arithmetical calculations. The subject is only aware of the final result, being entirely ignorant of the process by which it was arrived at. Later this process can be recalled in hypnosis as conscious memories. To assume that such a calculation can be performed by a brain process not accompanied by thought would seem to require the abandonment of the doctrine of the correlation of mind and brain. In some instances, as with automatic writing, the subject becomes aware of the automatic conscious process though ignorant of its origin. Are we to assume here again that the processes giving rise to the same manifestations, under the same conditions, differ in kind according as whether a subject is aware of them or not — in the former case being psychical, in the latter physiological?

[1] Proc. S. P. R., Vol. XX, p't liii, 1906.

7

The great variety of phenomena occurring in abnormal conditions are often explained by the patient in hypnosis as the manifestations of ideas (perceptions, hallucinations, memories, emotions, etc.), which are remembered as such, though unknown to the personal consciousness. [This evidence does not differ in kind from that derived from automatic writing (3).]

8

After all, as I conceive the matter, the one great difficulty in the minds of those who are unable to accept the psychological interpretation of subconscious phenomena lies in understanding how we can have states of consciousness of which we are unaware. Consciousness is represented as a functioning unity, and it is difficult to accept the notion that all states of consciousness are not so synthesized as to form part of that great system which we dub self-conscious. Thus, consciousness is confused with *self*-consciousness. This has come about because the only immediate experience which anyone has of conscious states is with that which belongs to his self, which is only another way of saying with that of which he is aware. All conscious states, so far as we experience them, belong to, take part in, or help make up a self,— in fact, the expression, "We experience" implies a self that experiences. It is difficult, therefore, to conceive of a conscious state that is not a part of a self-conscious self. It seems queer then, to think of a state of consciousness, a sensation, a perception, an idea floating off — so to speak — by its lonesome self and not attached to anything that can be called a self. It is difficult to conceive of anything worthy of being called a sensation or perception, excepting so far as there is a self to experience it; and yet it really is a näive conception to imagine that we are self-conscious of each and every conscious state that is aroused in correlation with our nervous system. Such a conception is very much akin to the näive notion of scientific materialism which assumes, for the practical purposes

of experimentation or other reasons, that phenomenal matter really exists as such. Consciousness whether in an elementary or complex form must be correlated with an innumerable number of different physiological brain syntheses. If this is not so the whole structure of the psycho-physiology of the mind and brain falls. We have every reason to assume that some sort of a psychical state occurs when any one of these association-groups is excited to activity. (At any given moment the great mass of them is inhibited.) There is strong reason to believe that though ordinarily there is a harmony in the functioning of these association-groups, yet at times there is considerable disharmony and there is clinical evidence for believing that there may be some independence of activity, especially under pathological conditions (hallucinations, obsessions, etc.), of different brain syntheses.

Without being obliged to determine what brain synthesis belongs to the personal consciousness at any given moment, we are entitled to ask why must we necessarily be aware of all the conscious states which may belong to each and every brain association-group? Is this not a naive assumption? If it is true that dissociated brain systems can functionate (as in other parts of the nervous system), and if it is true that they have psychical equivalents, then whether we are self-conscious of any given state of consciousness must depend, it would seem, upon whether the brain process, correlated with it, is synthesized in a particular way with the larger system of brain processes which is correlated at a given moment with the self-conscious personality. And in so so far as a brain process can occur detached from the main system of brain processes, so far can consciousness occur without self-consciousness. Unfortunately, we have scarcely a glimmer of knowledge of the nature of the synthesis, and therefore of the conditions which determine whether we shall be aware of any conscious state or not. This is a problem in psychology which awaits the future. Nor is self-consciousness a necessary element of consciousness. The naive character of the notion that we must be self-conscious of our consciousness is shown by introspective analysis in intense mental concentration or absent-mindedness. Here

is no awareness of self, only a succession of ideas which adjust and readjust themselves. It is not until afterwards, on "returning to one's self," that these ideas through memory become a part of our self-conscious personality.

It will be noticed that an essential element in the conception of the subconscious, as generally held by students of abnormal phenomena, is the absence of awareness of the personal consciousness for the dissociated ideas. A consideration of the facts in their entirety do not permit of so limited a view to which I am compelled to dissent. Theoretically, a conception so narrow prevents our obtaining a broad view of allied psychological phenomena, obscures our perception of the broad principles underlying them and hinders a correlation of closely related conditions. Dissociation, with activity, independent of the main focus of consciousness, does not necessarily imply or require absence of awareness on the part of the latter, and practically, as we have seen in discussing the phenomena of automatic writing, under the same conditions, a subject is sometimes aware of the dissociated ideas which are actively manifesting themselves and sometimes not. The same is true of post-hypnotic and abnormal phenomena. Indeed, even when there is absence of awareness on the part of the personal consciousness, the dissociated co-consciousness may, *per contra*, be aware of the content of the former. For this reason, if for no other, co-consciousness is the preferable term. The one fundamental principle and criterion of the subconscious is dissociation and co-activity (automatism). When we get rid of this notion of awareness as an essential element, we are able to grasp the relation between the subconsciousness of hysterics and the disaggregation of personality of the psychasthenic, a study with which Dr. Janet says he is now occupied. The obsessions, the impulsions, the fears, in short, the imperative ideas of the psychasthenic are as much disaggregated from the personal consciousness as the same are in the hysteric, excepting for that amount of synthesis that gives awareness. Indeed, the hysteric may have a certain amount of awareness, or awareness for some and not for other ideas. The only difference then between an ordinary obsession and a "subconscious"

obsession as commonly viewed, is that the subject is aware of the one and not of the other. Undoubtedly the condition of awareness alters considerably the resulting psychical content, as it brings into play various co-operative and modifying and in some measure adjusting ideas. This is not the place to enter into a consideration of the differences and likenesses between psychasthenia and hysteria, but I believe it important to insist that lack of awareness is not an essential fact or in the development of the subconscious, and furthermore that an appreciation of this fact will enable us to better correlate the different varieties of co-conscious activities not only in various diseased conditions but with facts of normal mental life.

9

Those who maintain the physiological interpretation seem to me to involve themselves in difficulties far greater than any offered by the psychological interpretation. It is a fundamental interpretation of psycho-physiology that all thought is correlated with physiological activities. Whatever doctrine we adopt, whether that of parallelism or psycho-physical identification, every psychical process is correlated with a physiological process and *vice versa*. We cannot conceive of a psychical activity without a corresponding physiological one. How then can we conceive of a physiological process of a complexity and character capable of exhibiting itself as a spontaneous volitional intelligence without corresponding correlated ideas? Surely this needs explanation quite as much as does a lack of awareness of conscious processes. Yet with a certain modification of our conception of the meaning of the physical, it is possible to reconcile both interpretations. As a panpsychist I find no difficulty in accepting both a physiological and a psychical interpretation. For those who accept panpsychism there is no distinction to be made between conscious processes and brain processes of a certain order, excepting as a point of view. They become identified one with the other. The psychical is the *reality* of the physical. I cannot conceive of brain processes except as objective phenomena of conscious processes, and I cannot conceive of consciousness excepting

as the reality or "inner life" of brain changes. So that we may indifferently describe automatic actions as manifestations of physiological activities, if we keep to one set of terms, or of psychical activities if we mix the terms. But in doing this let us not straddle and deceive ourselves as to our real position. In thinking in physiological terms we must not confuse ourselves and, by adopting a terminology, imagne that those physical brain factors are without psychical equivalents. To hold to a pure physiological explanation without the notion of anything psychical as a part of their real nature, is to postulate consciousness as a pure epiphenomenon, something that we can shift in and out at our pleasure, when we have brain action, and juggle with as a conjurer juggles with his coins,— now you see them and now you don't.

It may be that the final explanation of many conscious processes, if we would avoid the entanglements of metaphysics, must be in physiological terms, because it must deal with that which belongs to experience. We can experience physiological "after effects," and by a simple inference go back to the physiological functioning forerunner, and thus perhaps explain memory, but, as Professor Münsterberg so well points out, it is difficult to see how a comprehensible explanation of memory can be found in "mental dispositions," and on grounds, as I would state them, that such dispositions being out of consciousness we have no experience of them and can have no conception of what they are. They become nothing more than metaphysical concepts. For myself I cannot even think of a "mental disposition," meaning, for instance, a name or mental picture that is not at the moment a state of consciousness, whether subconscious or belonging to my self-conscious synthesis. However this may be, I not only say with Professor Münsterberg that "the physiological cerebration is well able to produce the 'intellectual' result," but it *must* be able to do so. The only question is whether it is accompanied by, belongs to, or *is* another aspect of ideas. This can, to my way of thinking, only be settled by logical inferences from the observed phenomena, and I have endeavored in what has gone before to marshal the evidence so far as it exists today in substantiation of this interpretation.

ABSTRACTS

THE ENERGIES OF MEN. (*Delivered as the Presidential Address before the American Philosophical Association at Columbia University, December* 28, 1906.) *Philosophical Review*, 1907.

In this stimulating essay Dr. James has been able to give loose rein to the practical, the human-life, and human-need sympathies that have always so strongly characterized his work, even when he wrote of things abstruse.

Beginning with a reference to the fact that the most important psychology of today is the "medical," the "functional" psychology, the writer goes on to state, as his main thesis, that the store of energy which most persons find available for their daily needs is far below that which — if they did but know it — belongs to them by right. It is not only that our intellects are tied down by "literality and decorum," or narrowed by the special claims of our professions and beliefs, but also, and more, that we are unable to command at will the "excitements, ideas, and efforts" that are needed to carry us over the dam within which our energies are confined.

After reciting some remarkable instances of the breaking down of the barriers, through emotions, ideas, and efforts of the will, and after dwelling especially on the striking case of a literary invalid who regained his health and vigor and vivified his mental tone through the severe discipline of the Hatha Yoga, Dr. James goes on to analyze a little further the issues that are here at stake.

Three problems, he thinks, press most of all for a solution, the first being, In what terms can we best define the nature of these gains in mental force?; the second, What, in each direction, are their limits?; the third, What are the "keys," the "paths of access" to these reservoirs of power?

These are problems to be worked out, not through laboratory-research, but through the study of the mental lives of individual men in action, a kind of study in which Papini of Florence has, he says, already been a pioneer. "We ought somehow," the author says, "to get a topographic survey made of the limits of human power in every conceivable direction, something like an ophthalmologist's chart of the limits of the human field of vision; and we ought then to construct a methodical inventory of the

paths of access, or keys, differing with the diverse types of individual, to the different kinds of power. This would be an absolutely concrete study, to be carried on by using historical and biographical material mainly," and so on.

With this program the writer leaves us, feeling, perhaps, somewhat as Virgil and Dante must have felt when they found themselves, in the grey of that early morning, at the foot of the Mount of Purgatory. Verily, we may be grateful for the program and for the vision of the hilltop, but we shall have a plenty of gratitude remaining for anyone who will point out, in more detail, the ways and means of further progress.

On this question of practical "means" Dr. James does not assume to speak at length, although a variety of suggestions come out incidentally, in the discussion of the cases cited, and of the social and religious movements which have furnished in individual instances the keys for unlocking these stores of latent energy.

These latter influences are classified under the heading of "ideas," though the category of "emotional excitements" would seem equally appropriate for many of them, as also for some of those that are ranged under efforts of the "will." In truth, this is but another illustration of the fact that neither "feeling," "intellect," nor "will" can exist, except in theory, without an intermixture of the other two.

Dr. James points out afresh that the scientific doctor should not be so hide-bound by prejudice as to blind himself to the interest of the great popular, emotional or religious movements that are characteristic of our people and our day. It is not enough to say that they are closely similar to all the superstitions that have come and gone since time began. Each one has its own features, and in general it may be said that each is an improvement on its predecessor.

If the lines of research sketched out in the essay are in reality the best to follow, the task is one in which the medical psychologist can, perhaps, play a more important part than his academic colleague. Two points suggest themselves in this connection.

1. Dr. James says that the contracted field of mental life of the ordinary man may be compared to the contracted field of consciousness of the hysteria patient, but adds that what

with the latter is the result of disease is with the former the outcome of an "inveterate habit" which he should learn to overcome. Is this distinction altogether valid, and may we not learn something to our advantage through the admission that the difference between the hysterical patient and ourselves is in detail and degree and not in kind?

2. In the able, if extravagant analysis of "Cosmic Consciousness" by Dr. R. M. Bucke, the argument is made that just as 'self-consciousness," with its power of reasoning in terms of symbols and of concepts, is an outgrowth of "simple consciousness," so we may look forward (on the basis of some slight observation) to the eventual appearance of still higher forms of conscious life.

It is no harder for the cultivated man to express his complex thoughts in fluent speech then for the Bushman to make known his crude ideas in a few and scantily differentiated terms. The barrier which hems in the Bushman is a real one, and yet to some extent a surmountable one, even though one which education and civilization usually pulls down stone by stone. May not a difference of a similar sort separate the person who has learned to dwell in regions of higher orders of energy from his former self? In other words, the barriers that keep us from our best selves are to be overcome not only under a supreme effort of the will, but also (conceivably) through the force of *rightly directed* education.

The whole address is couched in the glowing language so characteristic of the writer, and would form a fitting commentary to some of Emerson's inspiring sentiments, in prose and verse, on kindred themes. The time is ripe, just now, for exhortations of this sort, and one proof of it lies in the fact the educators of all grades have learned to substitute movement and action for gloomy introspection, and to preach "progress" at all hazards.

May scientific psychology not fail to lend its aid to the great work!

Meantime, it may be borne in mind that light upon these problems may be looked for, not only from psychology but also from physiology, and that, here, laboratory research may be able to assert itself to advantage. The principle of the so-called "physiological reserve" is applicable, perhaps, to the case of

mental energy as well as to that of the action of the heart, etc., and points to the "prodigality of nature," as discussed by Dr. S. J. Meltzer in his able paper recently published in the Journal of the American Medical Association.

JAMES J. PUTNAM

I. THE TRAGEDY OF CHICAGO — A STUDY IN HYPNOTISM. *By Dr. J. Sanderson Christison, Chicago. Published by the author.*

II. UNTRUE CONFESSIONS. *By Hugo Münsterberg. The Times Magazine, January,* 1907.

On January 12, 1906, in the city of Chicago, a young married woman was brutally outraged and murdred. Her body was discovered by a young man, one Richard G. Ivins, lying face downward on a manure pile in a barnyard, whither he had gone to attend to his father's horse. Having observed the body he immediately reported the matter to his father at the house, and the father notified the police. The officers who inspected the premises found the woman's hat at her feet, but could discover absolutely no evidence of a struggle. Purse, shopping bag and muff were missing. Around her neck was a hard-drawn copper wire, the ends of which were twisted together. Suspected by the police, Ivins was arrested and charged with the crime, whereupon he is alleged almost immediately to have confessed his guilt. He was subsequently tried by jury, convicted, and despite his protestations of innocence, hanged on June 22, 1906.

Thus was consummated a double tragedy, the first part of which is veiled in mystery, while the second had the sanction and was carried out under the solemn auspices of the law. That Richard Ivins was guilty of a most foul murder, that his "confessions" are true, and his punishment just,— such is the opinion of jury, court and populace in Chicago. That he was innocent of crime, that his "confessions" are the product of a temporarily disordered mind, and his punishment legalized murder,— such is the opinion of Dr. Christison, Professor Münsterberg and other savants, whose views have the weight of authority.

The pamphlet of Dr. Christison contains an impartial, able and thoroughly convincing account of the evidence upon which he bases

his conclusion of Ivin's innocence; while the paper by Professor Münsterberg presents in brief, the psychological principles underlying untrue confessions in general, together with an application of these principles to the particuar confessions under discussion.

As the "confessions" of Ivins were the ground upon which he was convicted, and as these confessions were held to disprove an otherwise complete alibi, Dr. Christison attempts to demonstrate that they were obtained by the police and others, while Ivins was in a condition of hypnosis. The first confession was obtained from the boy by the Assistant Chief of Police, about 10.30 o'clock of the morning on which the body was found. Ivins did not write this confession; he merely signed it. By its composition and the psychological breaks it contains, the fact is placed beyond doubt that it is the product of a series of suggestions or leading questions put to him. The testimony of the police also shows that it is the product of bald assertions, while it is probable that every word in it was suggested to him or simply imputed to him, for the language is known to be, in large part, foreign to his character.

Discussing the conditions under which a confession of this kind might be obtained, Dr. Christison observes that there are three ways of grafting false ideas upon the minds of those who are rendered passive. The first way is to make a simple statement or series of statements in an apparently sincere and credible manner, under quiet, restful and practically solemn circumstances. In the second method, some statements are made and certain conditions are associated which by inference cause the belief desired, through the natural laws of association of ideas, although the belief may be contrary to reason and experience. The third method consists in employing forceful or awe-inspiring assertions, especially under isolated and uninterrupting circumstances. Memory is disconnected and the reasoning faculty of the susceptible individual is unable to dismiss the ideas suggested or asserted. This third method was precisely what was applied to young Ivins, and not until he was removed from police influence, and the true events were brought to his attention, was he delivered from the grafted delusion.

The second confession which was not written, but was signed by Ivins, is considerably longer than the first. In it are to be observed more markedly just those peculiar features that one would expect to find in an hypnotized subject, — namely, contradictions, freaks of memory and absurdities. A third confession was obtained from the prisoner, in which appear all the characteristics of the other two, with of course, certain unessential variations in detail.

During the trial, and with these damaging confessions confronting him, Ivins was placed upon the witness stand. He appeared to be calm and gave no evidence of mental perturbation. For everything he did prior to his first alleged confession his memory appeared to be good, and he was in no way shaken in any material statement. But relative to what he is alleged to have confessed to the police and to others, he had no recollection whatever, or no distinct recollection, while he did remember some visual and auditory impressions, such as seeing a pistol aimed at him during the coroner's inquest, being shown a "hunk of wire," etc. To the end of his life he maintained his innocence, and among his last words were these: "I suppose I must have made those statements, since they all say I did. But I have no knowledge of having made them, and I am innocent of that crime."

The point upon which Professor Münsterberg desires most particularly to insist is the immense importance of borderland mental cases for the psychology of the court-room. The so-called "confessions" of Ivins serve as the point of departure from which he proceeds to discuss the psychology of untrue confessions in general. The more the scientific analysis and explanation of mental life make progress through the experimental and psychological, comparative and clinical methods, the more we learn how subtle the internal connections are, and how insufficient the popular psychology must be with which the facts of life are usually interpreted by detectives and attorneys, by juries and judges.

Of course in a criminal procedure there can be no better evidence than a confession, provided that it is reliable and well proved; and yet at all times and in all nations experience has suggested a certain distrust of confessions. The danger of accepting them seems to have been felt more strongly at some times than at others; but the essential argument against the trustworthiness of confessions had a purely social origin; it referred to possible promises or to threats by other members of the community.

There is perhaps another motive which might induce a man in full possession of his faculties to declare himself guilty against his better knowledge. It is possible that persons wrongly suspected of a crime may, in the face of an unfortunate combination of damaging evidence, prefer to make a false confession in the hope of a recommendation to mercy. Here belong the confessions in the famous Boone case in Vermont; and in this group we may place not a few of the historic confessions in the Salem witch-craft tragedy.

In those dark chapters of New England history there is also to be found an abundance of other forms of confession which lead us

step by step from well-balanced calculation to complete alienation through all the borderland regions of mental confusion and disintegration. The untrue confessions from hope or fear, through promises or threats, from cunning calculations and passive yielding, shade off there in Salem into others which are given with real conviction under the pressure of emotional excitement or under the spell of overpowering influence.

Although there is little danger of the false confessions of melancholia or other depressed states being taken for true, does this give security for a proper rating of those illusory confessions which, like the absurdities of the Salem witches, result from the temporary abnormal states of a not-diseased brain? The crude standards of easy-going psychology will not avail here, for we must never forget that there is nowhere a sharp line to be drawn between the symptoms of real mental disease and the variations in normal personalities. There is no mental trait that belongs to mental diseases only; whatever we find is made up of the same material that enters into the normal interplay of human minds. It is the order and harmony which are disturbed, and a trait becomes psychologically alarming as soon as the balance is sufficiently destroyed to make the purposes of life impossible.

There is a transitional region for all mental activities, and nowhere perhaps, is this shown more clearly than in the field of memory, whose characters, even within normal limits, are so various. That we forget is in itself no defect. On the contrary we could not fulfil the purposes of life if we did not disburden our memory constantly of superfluous matter; but it is evident that this suppressing and supplementing of memory ideas makes us unfit for life when it assumes large proportions.

Our knowledge of our own personality and its doing is only a function of memory. We know of ourselves, in a psychological sense, through the connected memory of our actions and of our experiences. As soon as the memory for our own past is lost completely, the pathological character is, of course, evident; and if the ideas which form ourselves become dissociated and groups become split off as a second or a third personality, no one doubts the abnormality of the phenomena. Yet here again we can reach the most hopeless forms through small steps from the experiences of our daily life. Hence the borderland region between the normal variations of personality and the complete pathological destruction of the self demands the most earnest consideration in the court-room.

The so-called "confessions" of Ivins seem to Professor Münsterberg, absurd and contradictory and exactly like the involuntary elaboration of a suggestion put into his mind. His whole

life history and the expression of his face were in fullest accord with the suspicion that his mind was in a state of dissociation when he began his confessions. Yet there was something obscure in the case. It was difficult to understand how the sudden change from denial to confession was brought about unless there was a sudden external shock or some overwhelming fascination which might be, and has been known in specific instances cited by Professor Munsterberg to cause a disintegration of personality. The clue was furnished a few days before Ivin's death, by a newspaper report, which read in part as follows: "He asserts that his only recollection of the coroner's inquest is that of seeing a *revolver pointed at him*. He said: I saw the flash of steel in front of me. Then two men got before me. I can remember no more than that about it. Someone told me afterward who the man was; but I had not seen him at all, and I don't recall seeing any other men even until after I had seen the revolver. From the time I was arrested I do not believe that I was myself for a moment, until after I was over here in the jail. Everything about that time was a blur, a blank to me."

"I saw the flash of steel in front of me." And from that moment everything became a blur and a blank. It was the one missing link in the chain of evidence of his innocence. To the psychologist this evidence was convincing; to the court and to the jury, it held no appeal, and Ivins was hanged on the ground of these logically and psychologically impossible confessions.

J. E. Donley

ANALYSIS OF LOCALIZATION. *Illustrated by a Brown-Sequard Case. By C. Spearman. The British Journal of Psychology. Vol. I, pp.* 286-314, 1905.

The case here reported was that of a miner suffering from compression of the spinal cord at the sixth dorsal vertebra. This caused great loss of movement in the *left* leg, and an almost complete loss of sensation about the waist and on the *right leg*. The man had been stabbed in the back twenty-six years before, but did not know that the point of the knife remained imbedded in the spine. After operation the symptoms grew worse at first, then a steady but very slow improvement was noticed. The patient was operated on in October, 1903, and the observations of the present article were made from May to August following.

Both legs were tested on the thighs, the calves, the feet and the toes for (1) perception of passive movement, (2) contact sensi-

bility, and (3) power of localization. The power of localization was tested in four different ways, as follows: (*a*) "Simple" localization. The patient's eyes were closed and the limb moved about so that the visual image of position was lost. The skin, shielded by cardboard one centimeter distant, was then stimulated with a bent wire, and the patient indicated with a pen on the card the spot just above the point stimutaled. (*b*) Localization by "looking;" Volkmann's method. A stimulus was given, the patient then opened his eyes and pointed at the spot without touching it. (*c*) Localization by "groping"; Weber's method. With closed eyes the patient endeavored to touch the spot stimu.-lated by groping for it with his finger. (*d*) The usual "compass" method, with points both simultaneous and successive.

The threshold for the perception of passive movement was about normal for all the joints of the right (tactually anesthetic) leg and for the left hip, but for the left (parlyzed) knee it was over twenty times the normal, and no amount of movement of the left ankle produced a change in consciousness. Contact sensibility was tested by von Frey's "hair method." Both legs showed a threshold at all points much higher than the normal, but that for the right was uniformly higher than that for the left, varying from 60 gm.: 24 gm. for the thighs to 11 gm.: 6 gm. for the toes. In "simple" localization the median variable error was approxi-mately normal for all points on the right leg and on the left thigh, but three to four times the normal on the *left* calf, foot and toes. On the other hand, in localization by "looking" and by "groping" the median variable error was from two to four times the normal on all points of both legs. On the thighs and calves the *right* leg was higher than the left, on the feet the two were about equal, while no the toes the right was slightly lower. The compasses showed the same thresholds for both legs, and the results were approximately normal.

In analyzing localization in the light of these experimental results the author finds three distinct types. In the first type there is an immediate consciousness of the spatial relation of the stimu-lus, "a pure 'thereness' with reference to the body, and especially, head." This "thereness," or sense of position, would seem to depend on articular excitations, and it is owing to the lack of these articular excitations from the lower joints of the left (paralyzed) leg, as indicated by passive movement, that "simple" localization

is so vague on that leg below the knee. The second type of localization is that by the mediation of associated spatial images, as illustrated in the "looking" and "groping" procedures. As soon as a point is touched, a mental image is formed of the member and the part stimulated, and the further step is to reproduce this image with the help of vision or touch. Here it is not so much "thereness" as contact sensibility that governs the localization, and on this account both legs show a much higher error than the normal, while the left, being slightly more sensitive, has the lower error of the two. But how is it that this does not extend to the feet and toes? The author thinks that while contact sensibility is the chief factor in the formation of the spatial mental image, there must be an initial localization by a feeling of "thereness." When the articular excitations for this "thereness" are lacking, as in the left foot and toes, the image is vaguer and the error in localization is greater. It is to injury of the tracts conducting the articular excitations that Allocheiria, or transferred localization, is due. The third type of localization, exemplified in the compass tests, is characterized by direct comparison of sensations. Into this the articular excitations do not enter at all, and in spite of the reduction of contact sensibility the threshold of "twoness" remains practically intact.

From the relative amount of disturbance in these three types of localization in the present case the author argues against the position of Forster, "that the movement sensations from the joints are primitive, and the spatial sense of the skin is merely a derivative therefrom." Rather does it seem that all these types have "developed side by side, but the skin has been less hasty to part with earlier modes of function."

J. C. Bell

REVIEW

A TEXT-BOOK OF PSYCHIATRY FOR PHYSICIANS AND STUDENTS. *By Leonardo Bianchi, M.D., Professor of Clinical Psychiatry and Neuropathology in the Royal University of Naples. Authorized translation from the Italian by James H. MacDonald, M.B., Ch. B. Glasg.; New York, William Wood & Company*, 1906.

Judging from the numerous reviews of and references to Professor Bianchi's work, the English translation has already

been widely read and consulted as, indeed, it should be since it is probably the most complete text-book on Psychiatry in the English language.

In it the psychiatrist will find much food for thought in the way in which the author has departed from the set nosographical lines so common to text-book descriptions of mental disturbances and has sought to present a broad survey of the whole known world of psychiatric knowledge. Most of our text-books irritate the reader by a persistent and stilted adherence to arbitrary division and boundary lines by means of which the whole subject is cut up into so many blocks like the surface of a frozen pond prepared for the winter ice harvest; the reader like the skater must then bump along, tripping where he might have glided smoothly but for the artificial crevices. With each new text-book one must twist and bend one's mental machinery to fit the casing of each particular author's mind. The labor of reading is further increased by the necessity of reciprocally interpreting the new and the old text-books in terms of each other's nosological captions. In no other branch of medicine is the requirement of learning so impeded by the diverse and arbitrary sundering of a subject possessing such high claims to a natural unity.

It is refreshing, therefore, to the psychiatrist, and should prove of infinite value to the tyro seeking to gain a decent knowledge of psychiatric lore, to follow a book which proceeds naturally from beginning to end along logical lines more or less common to all other medical subjects. By this we do not mean to infer that Professor Bianchi has abandoned all reference by name to individual psychopathic and nosographic forms, for this would leave the reader without sign-posts and symbols upon which as students we have learned to depend while groping our way through murky places. But his tokens do not obscure the landscape and needlessly distract the attention. He has succeeded in doing what few psychiatrists have accomplished in their writings; namely, submerging the temptation to reiterate personal opinion at the expense of straightforward presentation of known facts. He rather harmonizes conflicting opinion in place of making confusion worse confounded. He seeks to simplify matters and facilitate understanding. His purpose is stated in the preface, where he says, " . . . Where others find nosographic

differences, I have been led rather to fuse and combine, and sometimes, on the other hand, to draw distinctions between clinical forms that have been confused under one name." Before this declaration and its fulfillment in the text the reader may halt, overcome with the fear that after all the author has been unable to suppress the desire to serve psychiatry *a la* Bianchi and to offer yet another personally trade-marked and copyrighted rubric to the already superfluous number of ante-mortem monuments raised by ambitious psychiatrists to their own memory. If such suspicion be aroused, let the reviewer put the mind of the reader at rest, for, though it is perhaps too much to demand of human frailty that the psychiatrist shall abstain from recording his guess as to what manner of form this our infant psychiatry is to present in its years of discretion, it is nevertheless true that the Italian author reduces to a minimum this selfish tendency and adheres consistently to the principle of synthesis rather than analysis in presenting his subject.

The book is a large one — though not too large — and if it should be necessary to limit oneself to a one-volume psychiatric library, no better choice could be made than that of Bianchi's work. The book deals not only with psychopathic forms, but gives a summary of the fundamental laws of the evolution of the mind in relation to the evolution of the nervous system as well as an architectural, anatomical and physiological plan of the human brain. There is a second part, "which is, as it were, an introduction to the clinical section, being devoted to the semeiology of the mental affections,— that is to say, to the examination of the elementary symptoms of the disordered mind, and to the analysis of their signification in relation to the facts of normal psychology and to the laws which govern their manifestation." Pathological anatomy, aetiology and therapy are considered hand-in-hand with the description of each nosographic form in the third and major portion of the book.

Professor Bianchi's expressed hope that the work might meet with the approval of physicians in general and psychiatrists in particular has already been fulfilled, and we join with him in the belief "that even to lawyers and magistrates it will offer a material and means for a surer and clearer vision as regards the new horizon of the law and its altogether modern application."

Wm. McDonald, Jr.

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A LOWELL CASE OF AMNESIA

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INTRODUCTORY NOTE

[I desire to thank Dr. Morton Prince for the opportunity to study this interesting case of Miss Susan N. of Lowell, Mass., for the use of some valuable notes on the case which I have incorporated in the examination, and also for his continued help, suggestions and inspiration. In addition, I feel under grateful obligations to Dr. Charles E. Donlan, superintendent of the Lowell City Hospital, and Mr. Morton J. Courtney, chairman of the Overseers of the Poor, for their many courtesies and their untiring efforts to furnish me with the necessary data in the history of the case. It is true that many of the experimental results are fragmentary and would have been considerably elaborated had the patient been seen earlier. She did not come under observation until August, 1906, about four months after the onset of the memory disorder, yet the phenomena presented by the case as a whole furnishes an interesting contribution to the pathology of memory.]

I. ANAMNESIS

THE family history is absolutely negative, so far as any neuropathic or psychopathic heredity is concerned. The patient, Susan N., was born in Tyngsboro, a small country village near Lowell, in 1855. She received a fair education and for several years taught in one of the district schools. She never showed any peculiarities, was always fond of reading and possessed a good memory. In character she was refined and sincere, and no tendency to day dreaming was ever noticed. In 1876 she did general housework for a Mrs. A.,

and sometime later she moved to Lowell to live with her sister, securing work in the drawing-room of one of the larger mills, where she remained until the spring of 1906. In 1904, however, she left her sister's home, and went to live with a Mrs. P., in order that she might be nearer to her place of work. Although she attended church regularly, yet no abnormal religious tendencies were ever noted. On March 20, 1906, she informed her sister that she was going to North Adams, but she did not state for what purpose. In fact, she had already forwarded her trunk. On that same day, in company with a friend, she attended an ordinary Lenten service at St. Anne's Church, and so far as was observable, as was learned through a later interview with that friend, no religious emotion of any type occurred. In fact, on leaving the church, she appeared to be in a perfectly normal condition.

After leaving her companion, all traces of the patient were lost, until she was later recognized by her relatives and friends at the Lowell City Hospital. At the time of this meeting, however, she had a complete general amnesia, absolutely every memory of her former life being obliterated. Meanwhile, a series of rather dramatic episodes had occurred, for which the patient was subsequently totally amnesic. The various names which she gave herself during her wandering episodes were apparently adopted, for it is well known that the taking of different names is quite common in protracted fugues. Of these names she had no recollection excepting the last, that of "Margaret Kelley," which she assumed. On March 25, 1906, about 6 A.M., five days after the disappearance of Susan N., a woman who later gave the name of "Mrs. Sarah Wilson," was found unconscious on the steps of the Lowell Normal School. She suffered greatly from exposure and was on the verge of collapse. As she was unable to give a satisfactory account of herself, she was taken to the Police Station. On her person were found several memoranda. One note, as published in the newspapers, written during the period of the wanderings for which she was amnesic, read as follows: — "No rest for the wicked; not much for the weary; travelling continuously day and night since the 15th; a bath and a change of clothes

would be luxurious, and I now find that I cannot indulge until I interview a party at Chelmsford Centre; hope I am forced to spend the night there, wherever the little town may be; very strange, but I have a suspicion that I am being followed; wonder if any fool thinks I am carrying much money with me."

The next day, "Mrs. Sarah Wilson" was allowed to leave the Police Station and she boarded a car for Boston. About 5.30 A.M., on March 27, 1906, a woman was found lying against a stone-wall near the car tracks, in a lonely portion of North Saugus. She gave the name of "Mrs. Alice Walker" and claimed that she had been beaten and robbed. In the meantime, the Lowell police had received a letter signed "Sallie Wilson," in which the writer stated that she was the cause of the plight of "Sarah Wilson" last Sunday (March 25), that she was the "double" of "Sarah Wilson," that she had always taken care to dress in the same clothes, was jealous of her brilliant intellectual attainments and had been following her for years to do her harm. Unfortunately, this letter was destroyed, and it was necessary to depend on the outline of its contents from newspaper accounts. Inquiry proved "Mrs. Alice Walker" to be the same woman as the "Sarah Wilson," who had been found on the steps of the Lowell Normal School a few days previously. The police were inclined to look upon her story of being beaten and robbed as a mere fabrication and she was allowed to go. A few days later, on April 3, 1906, a woman was found wading waist-deep in the Merrimac River and was rescued in a semi-comatose condition. Under stimulation, she revived from the collapse due to the cold of the river, but remained in a stuporous condition for a week following. At this time she was taken to the Lowell City Hospital. Although at first there was no clue to her identity, yet later inquiry proved her to be the same woman who was found on the steps of the Lowel Normal School eight days previously on March 25, 1906, and also by the stone-wall in North Saugus on March 27, 1906. In her handbag was found the fragment of a letter addressed to "Margaret Kelley, Fitchburg," but as this letter also was unfortunately later destroyed, it is not known if it were in

the original handwriting of Susan N. The name is, however, significant, as will appear from what transpired later.

During the stupor, which lasted a week, the patient failed to react to any external stimuli and on awakening from this state, it was found that the memory of her whole previous life from the time when she was born was totally obliterated. There was a general amnesia up to about April 11, 1906, with the exception of the preservation of certain memories to be later noted. The period of stupor, which appears to be analogous to the condition for which Sidis coins the word "hypnoleptic state," and to which he attaches great importance in cases of amnesia and multiple personality, is of some interest. He interprets it as a transitional stage from one personality or group of memorial images to another and therefore as representative of the exact point of cleavage or dissociation. A similar condition of stupor has been found in other cases, and in still others, it was entirely lacking. Although the analogy is a striking one, yet the fact that it occurs in only a portion of cases of dissociations of memory or personality, detracts considerably from its importance as an absolute symptomatic factor, and we must therefore look upon it as a pure episode, an epiphenomenon, like the hysterical stupors, trances and lethargic states. In the Hanna case there was a period of unconsciousness following the accident, in the Mary Reynolds case there was a profound sleep from which the patient awoke "to all intents and purposes as a being ushered for the first time into the world." In another case of functional amnesia which came under personal observation, it was stated that the loss of memory followed three attacks of "stuporous sleep," each lasting about ten hours. In the cases reported by Granville and Sharpey, the onset of the amnesia was also with a stuporous state. On the other hand, a number of cases of amnesia could be cited in which this stuporous state was entirely absent.

The awakening from the stupor, with all memory of her previous existence completely obliterated, was quite dramatic in its consequences. When addressed as "Sarah Wilson," the patient paid no attention, but asked, "Why am I called Sarah Wilson? My name's Margaret Kelley." She remained unidentified until the beginning of August,

1906, when she consented to have her photograph taken. It was the reproduction of this photograph in the newspapers, that a few days later, led to her identity as Miss Susan N. of Lowell, by her brother and sister. At first, the patient denied this name, but finally, although somewhat reluctantly, accepted it under the overwhelming pressure of argument by relatives and friends.

II. GENERAL FEATURES OF THE AMNESIA

After coming out of the stupor, the patient failed to recognize her surroundings and immediately gave her name as "Margaret Kelley" a fact of some significance if we remember the letter found on her person, and for which she was amnesic. It needed only a few questions to establish that she had completely forgotten all her previous life, knew nothing of the various happenings during the last month, of "Alice Walker" or "Sarah Wilson," or of the Normal School, North Saugus or Merrimac River episodes. She had absolutely forgotten the names and uses of familiar objects, but later acquired these with a rapidity that would have been manifestly impossible had she learned these for the first time, thus showing that the processes of association were all formed. At the time of the examination in August, 1906, this rapid acquisition of knowledge made it very difficult to distinguish what was learned from what was remembered. Spatial relationship was appreciated, while reading, writing and the capacity for spoken language were perfectly preserved. The patient could cook and sew, and walked, dressed and ate normally. The amnesia seemed to comprise principally the educational or school memories, events and the names of objects, persons and places. Everything she read appeared to her as if she had read it for the first time. Thus it appears that the more unstable memories alone disappeared, following Ribot's law for the destruction of memory, called by him the "law of regression," which may be stated that memory advances progressively from the unstable to the stable. Thus the higher, special and acquired memories, with their looser organization, were obliterated in Susan N. This comprised the names of objects, places, events and the

knowledge of general literature. These will be designated as the psychic memories. The more closely knit associations, which included the knowledge of her mother-tongue, reading, writing and the memories for coördinated movements, were preserved. By constant repetition, the latter had become almost automatic in their activity and the name of organic memories can well be applied to them. It was these organic, these stable memories, which were preserved, while the unstable psychic acquisitions were totally obliterated.

While at the hospital, the patient spent considerable of her time in reading, writing, sewing and fancy work, all of which she accomplished freely. She never attended religious services and knew nothing of the various sects, their names conveying no meaning to her. Although a little reserved in manner, yet she made friends easily. Her attitude toward the "lost period" of her life was never one of indifference, but rather a stoic bowing to the inevitable. According to the testimony of friends and relatives, there was no change in her character; both as the original Susan N. and in her new state, she was quiet, affable, sincere and possessed of uncommon intelligence. This disposes of any hypothesis of multiple personality, at least in its most fully developed form. The spontaneous activity was free and complete, there was no change in the psychical life, no transformation of character or the birth of a new ego, no new reaction to environment other than that demanded as a process of re-adaptation, the inevitable result of the extensive amnesia.

During July, 1906, the patient was taken for a drive and visited the chief places of interest in Lowell, including the railroad station, in the hope of reviving the memory by old associations. Although she intelligently appreciated all the scenes, yet everything was unfamiliar to her. One episode about this period is of interest, as throwing light on the spontaneous flashes of memory as revealed in the automatic writing and the phenomena of spontaneous distraction. One day, while idly holding a pencil over a block of paper and talking at the same time with a hospital attendant, the hand wrote automatically the words "Victoria

Wood." The patient was unable to explain the words or to point out their significance. She was unable to recognize her old friends and relatives, and her attitude toward her sister was as if she had seen her for the first time. About the middle of August, 1906, another peculiar incident occurred, which also may be interpreted from the standpoint of dissociated isolated memory flashes. She was visited by a fellow member of the church society to which she formerly belonged and who wore a pin which was the emblem of that society. The patient recognized the pin without having her attention called to it, but did not recollect the wearer.

After having thus given an account of the general features of the amnesia, we may now conveniently proceed to a more specific analysis of the memory. It will be best to begin with a brief statement concerning her first impressions after awakening from the stupor. The first thing recalled in the hospital was lying in bed in a small room with a woman sitting beside her. When asked her name, she gave it as "Margaret Kelley," stating that "it was the first name that came to my mind." This was possibly a memory flash from the period belonging to the letter previously described. When addressed as "Sarah Wilson," she paid no attention to the name. After getting up from bed, she remembered seeing the physician first and also remembered being transferred from the Infirmary to the Hospital Ward. She stated, "When I first saw trees and houses, I never remembered having seen them before." It was necessary to teach her the use of ordinary objects. Fortunately, I was present at the visit of an old and intimate friend of the patient, the Mrs. A. before alluded to. This furnished an excellent opportunity for the study of her reaction to former acquaintances. She was unable to recognize Mrs. A., even when her name was mentioned and when she was brought face to face with her. She reiterated "I don't remember," in answer to questions relative to prominent incidents of her childhood and early life. She asked the name of some nasturtiums brought by her visitor, and did not recall having seen similar flowers before. When the name "bobbins" was used in the course

of the conversation, she naively inquired, "What are bobbins?"

At the time of the examination she was perfectly oriented, knew her name, age, where she was, date, etc., but explained her correct answers only from having learned these data recently. There was no disorder of the time sense. All concrete facts, such as contemporary events, the names of authors, the titles and contents of their works, were only remembered from her reading since coming to the hospital.

For educational memories, such as grammar, history, geography, arithmetic, she was totally amnesic, excepting for those facts she had acquired since awakening from the stupor. Her description of objects furnished some interesting data. Some were correctly given, but only from "seeing them since," as she expressed it; but for many of the objects of which she knew the uses, she was unable to attach a name. For instance, on being shown a candle, she knew its use but not its name or ever having seen one before. The same was true of a pen and of pictures of various domestic and wild animals. At all times, she carefully distinguished what she learned from what she acquired. Definitions of simple words were correctly given. Once she pertinently stated, "It is mostly names of people and of places that have gone from me entirely." She calculated well, there was no disorder of apperception, but the associations were narrow, being mostly of a modifying or descriptive type. Some objects, such as tables, electric cars, boats, were familiar to her, both by name and use, but only from having recently seen or read about them. She did not remember the name of any animal she had not seen since coming to the hospital. In a test for reading, the French word "curé" occurred, which was not only correctly pronounced, but recognized as being a French word. When asked the definition of a triangle she drew one correctly. A careful quizzing over the various incidents of her life, school, work as a domestic in the mills, work as a school teacher, various places in Lowell, the Merrimac River, Normal School and Saugus episodes, her friends and relatives, the attendance at St. Anne's Church, disclosed

a total amnesia previous to "waking up" at the Lowell City Hospital. She frequently reiterated — "I only know what others tell me, I only know my friends and relatives because they tell me so and I belive them."

Physical Examination

The patient is tall, thin, of a dark complexion and has dark brown hair, streaked with gray. She has an intelligent and rather serious facial expression. She sleeps well, does not suffer from headache and displays nothing that is popularly termed "nervousness"; knee jerks brisk and equal; tongue median and steady; no conjunctival or palatial anaesthesia. The pupils are equal and react promptly to light and accommodation. There is no limitation of the visual field, no localized or hemi-anaesthesia or hyperaesthesia, no allocheiria, no disturbance to tests with aesthesiometer. It will be seen that the amnesia did not run parallel with any disturbances of sensation, phenomena which Janet has noted as being of frequent occurrence. In spite of the amnesic symptom-complex, "those special stigmata, which in the popular neurological mind are supposed to be almost the *sine qua non* of hysteria, were absent" (Prince). Even the fugue presented no concomitant phenomena which would interpret it as a protracted hysterical somnambulism.

III. DREAMS

As in other cases of mental dissociation leading either to amnesia or to multiple personality, a careful record of the dreams serves to elucidate the dissociated states. Studies along these lines in the case of Susan N. yielded interesting results. These dreams were looked upon by Susan N. as strange and bizarre, not synthesized with her normal waking or sleeping personality, and therefore possessing only the ulterior significance of similar phenomena in healthy individuals. That these dreams were dissociated memories is evident when we analyze the dream records of all carefully studied cases of amnesia. Like the experimental distraction memories and those sudden and spontaneous flashes of memory which were so prominent in the case of

Susan N., these dream memories were very intense, were clearly remembered in the waking life, and there was a frequent recurrence of the same dream.

In Charcot's observations on Madame D., the patient was frequently heard to talk in her sleep and mention names and incidents for which in her waking state she was amnesic. In Sidis' case of Rev. Mr. Hanna, many of the lost memories reappeared during dreams. Vaef's patient, with a retrograde amnesia for a trip to Australia, occasionally dreamed he was in the latter place, but the dream would rapidly fade away on awakening. That dreams are often memories of dissociated experiences is best seen in Prince's case of multiple personality, Miss Beauchamp. These dreams were all recorded by Sally, one of the personalities, thus offering an exceptional opportunity for the study of the dreams of the other personalities designated as B I and B IV. Dr. Prince says, "As a matter of fact, as a result of the inquiry into the dreams, it transpired that however distinct and separate was the ideation of B I and B IV during the waking state, during sleep these personalities reverted to a common consciousness and became one and the same. That is to say, the dreams were common to both; each, B I and B IV, had the same dreams, and each remembered them afterwards as her own. The logical consequence of this, was that the dreams might have had their origin in the waking experience of B I or B IV."

This observation is the most important one made on the supposition that dreams have their origin in the waking experiences of an individual and establishes that in states of psychopathic dissociation dreams are often memories of the experiences of the original, primary personality, of which there is amnesia in the waking state.

As to the dreams of Susan N.

1. "One dream stands out very clear. This was several weeks ago. It seemed as if there was a man and a woman came to see me with Mr. C., and they told him they were relatives of mine and were willing to take care of me. So he sent me off with them and we travelled quite a distance. On part of the road there seemed to be trees growing on both sides, not very close together, and after a time they

came to a house and after they took me inside the man commenced to beat me and the woman to pull my hair out. The man had coarse whiskers and I think I'd know the woman if I should see her." This dream was repeated several times in an identical manner. As an interesting and valuable sequel to the above, one afternoon in August, the patient was taken for a drive to her old home in the village of Tyngsboro, in an effort to ascertain if she would recognize any of the scenes of her childhood and early youth. But everything was strange and unfamiliar to her: the old cemetery, a former schoolmate who was encountered on the village road, and even the building in which she had formerly taught school. She was then taken up the road to the house where her brother and sister lived, and on reaching it she immediately said, "This is the house of my dreams. I can see very plainly the man dragging me off the wagon and the woman pulling my hair up those two steps and through the piazza into the kitchen in the back." On being confronted by her sister, the patient exclaimed, "That is the woman of my dreams," and although immediately recognized by her sister, Susan N. disclaimed any knowledge of her and was very frigid in her manner.

2. "I seemed to be going to a place — Townsend (spelling the word). I was in the trolley going to the railroad station. A lady was with me, and we were starting to go to that place, and when we got to the railroad station my dream ended." Further analysis disclosed that this Townsend dream occurred before the patient was taken into the city in July, 1906, and that at this latter date the station was recognized as the building seen in the previous dream but without any feeling of familiarity. In both these episodes the dreams were memories of dissociated periods or experiences for which the patient was amnesic in her waking state and which were therefore interpreted as purely imaginative creations.

3. "In one dream I seemed to be picking flowers here on the grounds, red and white blossoms. It was an ordinary garden with plants."

IV. EXPERIMENTAL DISTRACTION MEMORIES

What I called distraction memories in a previous communication, are those fragmentary or partially organized flashes from the dissociated mental life which become synthesized with the consciousness when the attention is experimentally distracted by a monotonous sensory stimulus or which arise as a result of voluntary or involuntary abstraction. To the latter (involuntary abstraction) the term spontaneous may be applied, to distinguish them from the experimental variety. The experimental method has yielded valuable therapeutic results in the synthesis of amnesia. In the Hanna case it was possible to effect a complete restoration of the entire dissociated memory system. In four cases of alcoholic amnesia which I published in this journal, I was able to completely restore the memories of the amnesic period by this method. The method was also successful in other personal observations: a case of hysterical amnesia with impulsive episodes of excitement and attempts at suicide, in a case of functional amnesia with wandering impulses, a case of organic amnesia of the retrograde type following a cerebral embolism and finally in a protracted fugue with the execution of many complicated acts, lasting several days and for which the patient was totally amnesic. It is hoped that the details of these interesting cases will be published later.

The application of this method to the amnesia of Susan N. was only partially successful, yet yielded such interesting results in the form of isolated flashes of memory, to warrant being recorded. The monotonous tick of a stop watch was used; the patient was asked to thoroughly relax, to think of nothing but listen intently to the watch tick and tell what thoughts came to her mind. The first trials yielded only a few isolated questions, such as "When did I leave Lowell to go to North Adams?"; or, "Did I ever teach school?" When asked if these were genuine memories, she replied, "I call them wonderments." The fifth trial was more successful, and the following resulted (five minutes' stimulation): "A quotation —

> 'How strange it seems, with so much gone,
> Of life and love, to still live on!'"

Asked the origin of the quotation, she replied that the lines were in Whittier's "Snow Bound." As it was previously noted that all her knowledge of literary works had disappeared, these lines must be of the nature of dissociated memories. Then she continued, evidently by a process of continuous association with the above, as she was not distracted at that particular moment.

"Life is ever Lord of Death, and Love will never lose its own."

As an interesting corollary, she added, "I have a good many lines that come that way. I don't know where from." The above quotations are in reality from Whittier's "Snow Bound," and were correctly given.

Sixth trial (five minutes):

"He is dead, the beautiful youth,
The heart of honor, the tongue of truth,
He, the life and soul of us all,
Whose voice was blithe as the bugle call,
Whom all eyes followed with one consent,
The cheer of whose laugh and whose pleasant word
Hushed all murmurs of discontent!

"That's from Longfellow."

[The quotation is from Longfellow's "Killed at the Ford," and is correctly given, with the exception that the word "*soul*" in verse 3, should be *light*."]

"Have you read that lately?" "No, I can't tell where I read it or when, but I am sure not since I came here."

Seventh trial (five minutes):

"From the strong will and the endeavor
That forever wrestles with the tides of fate
From the wreck of hopes once scattered,
Tempest shattered
Floating wastes and desolate,
Ever drifting, drifting, drifting
On the shiftless current of the restless main."

Then she added spontaneously," These quotations come to my mind and I can't account for them."

[The above quotation is from Longfellow's "Seaweed." It is incorrectly given, the last two verses being transposed from a previous stanza.]

Eighth trial (fifteen minutes). "I was wondering how far away California is. Those two men who claim to be my brothers and the one who says she is my sister, are my relatives. I know San Francisco is in California."

Other experiments yielded nothing of value.

Automatic writing produced only a portion of a quotation from Longfellow's "Seaweed" and the name "Walter Marston, Boston." Crystal gazing likewise was negative in its results, while hypnosis was impossible.

V. SPONTANEOUS DISTRACTION MEMORIES

The spontaneous distraction memories or the memory automatisms of Susan N. are of the same nature as the experimental distraction type, with the exception that they occurred in normal abstraction during reading or conversation. Chiefly allied to these are the dream memories. These memory automatisms are genetically related to the paradoxical, scrappy and fragmentary memories of Miss Beauchamp and Mr. Hanna, and because not synthetized with the personal consciousness, they are not looked upon as memories, but as strange, unfamiliar and isolated phenomena, which Susan N. well expressed by the term "wonderments." Examples have already been given in the writing of "Victoria Wood," the assuming of the name "Margaret Kelley" in awakening from the stupor and the recognition of a pin as the emblem of a church society. The others follow.

1. "Sometimes I have vivid memories of Eastport, when I was sitting and thinking. It came to my mind as other things do. It is a small place with small wooden houses, the streets aren't wide or clean, and they have many ups and downs. It is near the water. It doesn't seem to me as if I had been in a house there. They told me since that I have passed through there going up to St. Andrews a few years ago."

2. "I seem to have an idea of Portland, but it is not so clear as Eastport. All I can see is lots of nice looking houses and a great many trees."

Does anything of Boston come to your mind?

"When you say Boston, all I see is the word; when you say Portland or Eastport, I see the houses and trees."

A prominent feature of all these distraction memories was their complete isolation; they did not act as a nucleus around which other memories grouped themselves by association. In discussing similar phenomena in Miss Beauchamp (BI), Prince has given us a very pertinent description of these isolated flashes of memory. "The first class comprised memory flashes which were perfectly spontaneous, uninfluenced by any volitional effort of her own. They were the emerging into her mind of isolated memory images, such as a name, a face or a place, which seemed to come from out of nowhere, without any connection with anything else. They did not bring with them any extended associations and were unimportant so far as affording definite aid in adapting herself to her environment. Finding herself speaking with an apparent stranger, for instance, the correct name of this person would flash into her mind, or the face of an apparent stranger in a street car would suddenly become familiar, but there was nothing more extensive than this."

VI. ANALYSIS OF THE CASE

Before proceeding to the discussion of the complex psychic phenomena presented by this case of Susan N., it would be well for the sake of lucidity to preface the analysis by a brief account of some features of amnesia. If there has been a conservation of a certain group of organized memories and their reproduction cannot be brought about, we have the general condition of amnesia. In many types, particularly the functional, amnesias, the loss of memory is not absolute, but merely relative and apparent, that is, dissociated. However, when there exists an actual organic lesion of the cortex, the memories are not merely dissociated, but irrevocably destroyed, and under these conditions, not only do they fail to reappear in certain states of distraction, but all experimental restoration becomes manifestly impossible. Sometimes there are exceptions to this statement, as in a case of retrograde amnesia due to cerebral embolism, in which I was able to completely restore the memories of the amnesic period. Perhaps in this case, the embolic process

acted merely as a dissociative and not an actual destructive factor.

It is not the organic, but rather the functional amnesias, that display the most interesting and valuable phenomena. It is these forms that have cast considerable light on the mechanism of associative memory and to which the greater part of the published cases belongs. It is in these functional amnesias that the loss of memory for a given period is not absolute; there is rather a dissociation of an organized group of memorial images in such a manner that they fail to synthesize with the normal consciousness. Therefore, it may be stated as a general law that the memories of a functional amnesia for a given period are never lost, but merely dissociated. In states of experimental distraction (hypnotic and hypnoidal conditions, crystal gazing, automatic writing), in spontaneous distraction (dreams, reveries, waking abstraction), or finally in pathological distraction (delirium or hallucinosis) these dissociated memories become more easily synthesized with normal consciousness. In sleep, the memories of the amnesic period which are revised or synthesized in our dreams are looked upon as pure imaginative creations.

In waking abstraction, the memories are interpreted as strange thoughts, foreign to the personality, because lacking the personal synthesis of a normal stream of memory.

The relation of firmness of organization to memory has already been touched upon, and it is this organization which determines whether the amnesia be of the retrograde or continuous type. In the former, only those images are dissociated in which the organization is loose, and therefore a retrograde amnesia arises, because the most loosely organized memories are nearest to the present in point of time. In continuous amnesia, there is no apparent fixation of images, no organization and consequently under normal conditions there can be no later reproduction.

Thus it appears that a stimulus of a certain length and intensity is necessary for the healthy nerve cell, in order that its substance may reach such a state of equilibrium, that a physical, sensorial reaction may be reproduced as a psychic fact. This forms the dynamic basis of ease of reproduction

of certain images. In Rieger's case, unless the patient succeeded in finding the name of an object in eighteen seconds, he was unable to do so at all, and in some personal experiments on a case of amnesic aphasia, ten seconds was the maximum for recalling either the word or its equivalent association. Therefore it is best to regard memory as an expression of the activity of the cortex as a whole from characteristics retained by the neurons from previous excitation and stimuli. Amnesia is either a dissociation or a destruction of this reproductive activity, and according to the exact condition, it may be broadly divided into organic and functional. The factors in the production of the organic amnesias are the various poisons, of which alcohol is of prime importance, trauma, epilepsy, and diffuse or localized brain lesions, such as occurs in general paralysis, senile dementia, Korssakow's disease, tumors and hemorrhages. The functional amnesias stand in a casual relation to hysteria and the emotions, which factors are highly productive in causing dissociations of memory. So far as the synthesis of these dissociated memory disorders is concerned it is only in the functional and in a few of the organic types, such as some alcoholic, epileptic or traumatic amnesias, that experimental procedure seems to be successful. Here there is no real oblivion or destruction of images; they are merely inhibited, or in popular psychological parlance, are dissociated from the personal conscious perception. In the organic types, the destruction is real, because the functioning tissue of the cortex itself suffers a physical deterioration.

Symptomatically, amnesias are systematized when they take in all the memories of a period, localized when they comprise the memories of a certain epoch of life and general when the patient has no recollection of the previous life. These in addition to the continuous, retrograde and anterograde amnesias which have been previously mentioned, form the principal types of this particular memory disorder. There are a few instances, however, in which there seem to be localized amnesias for certain concepts only, usually the deeper associations being spared, as in the cases of Rieger and Wolff, thus showing again the relation of retentiveness to firmness of organization.

With these few considerations, the case of Susan N. may be defined as one of general functional amnesia, in which the higher psychic memories, such as the knowledge of objects, places, events, literature, were destroyed, while the lower and more organic acquisitions, such as reading, writing, speech, were preserved. This is in harmony with the law of regression, to which we previously alluded. In this respect, the case is unique of its kind, from the standpoint of general amnesia. In the Hanna and Mary Reynolds cases the entire previous mnemonic life was destroyed, even the narrowest automations being impossible. Certain aspects of the memory disorder of Susan N. have already been discussed, but there remains the important query,— what caused this profound disturbance in the dynamics of her memory? A toxic or traumatic etiology can easily be dismissed, likewise any hypothesis of multiple personality or an hysterical dissociation, as there is nothing, either in the history or symptomatology of the case, which could lead us to consider any of these factors. Unless we can postulate some adequate cause, we are forced to return to the unsatisfactory term of functional, which is equivalent to expressing a total ignorance. A careful review of the case has left but one explanation, which in itself is merely tentative. It is possible that an intense emotion of a religious nature may have taken place during the patient's attendance at church, and we know how far-reaching may be the dissociating effects of the emotions in producing amnesia or mutliple personality.

The reason for the selective action of any emotional storm, in dissociating one group of memories and sparing others, cannot even be conjectured. The inability to recognize objects or to tell their names, unless these data were recently acquired, showed that sense perceptions failed to call forth the complete associations of the object with anything previously learned. This of course could not be otherwise, considering the wide extent of the amnesia. The discussion of the other data in the case has already been given as a running commentary. Finally it may be stated that the experimental evidence in this case of Susan N. shows that we are dealing with mere isolated, disconnected

fragments of a wide system of memorial images, which in her present state are totally dissociated from the conscious mental life.

BIBLIOGRAPHY

Coriat, Isador H.— The Experimental Synthesis of the Dissociated Memories in Alcoholic Amnesia. JOURNAL ABNORMAL PSYCHOLOGY. Vol. I., No. 3., August, 1906.

Janet, Pierre.—Névroses et Ideés Fixes, 1898

Loeb, Jacques.—Comparative Physiology of the Brain, 1903.

Prince, Morton.—The Dissociation of a Personality, 1906.

Ribot, Th.—Diseases of the Memory.

Sidis, Boris.—Multiple Personality, 1905.

CONFESSIONS OF A PSYCHASTHENIC

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THE contribution to mental pathology which follows, was written because of its religious, ethical and psychological significance. Having received permission to publish these confessions after the death of their author, I am able to testify that however incredible to persons of normal mind some of the statements may appear, they are strictly in accord with facts; and thus they will be seen to justify the words of M. Th. Ribot, who says, "The healthy, normal man suffers himself to live physically and morally without studying himself, and without watching himself live, at least any more than is necessary. But the moment the demon of analysis has entered into us, we do not know where it may lead us; an absolute tyrant, it will one day remain sole master of the place. Even under its feeble form it is the first step to the abnormal, the first stage in morbid evolution. The inevitable outcome of this tendency to analysis, so soon as it has passed a certain point, is mental disaggregation. The majority of people, either by strength or by feebleness of intellect, by luck or ill-luck, by a simple and limited life, or by incapacity of attention to maintain it, escape this tendency. But if there are many who escape the ill effects of mental analysis, there are also many who suffer seriously from the wounds this tendency inflicts. No one can continually examine himself with impunity about his own mental nature."[1]

The confessions are as follows:— I was brought up very religiously and morally, since both my parents had been educated under orthodox and pietistic influences. With my father especially (as I later found out, long after my mental disease had broken out and reached its highest point) even in his very early life, this religious tendency assumed an highly emotional form. Thus in his tenth year he had a dream, the import of which was, that having died, his soul was led by two angels before the Judgment

1 La logique morbide. N. Vaschide. Preface by Th. Ribot. F. R. de Rudeval & Co. Paris, 1903.

Seat, where the Savior addressing him said, "You may not stay in Heaven, for you are not ready for it."

Indeed my father's whole youth was spent under the shadow of influences which were not only religious and ethical, but somber and even gloomy, so that the habits thus early implanted in him, of piety, morality and overstrained conscientiousness remained with him through life.

The result of all this was that I, long before my tenth year, naturally received strong religious impressions; while even in our Sunday school we were subjected to influences which the following example may serve to illustrate:—We were given a printed sheet of paper, on one side of which the "wide" and "narrow" paths were represented in glaring colors. Upon the right the "narrow" path, with few travellers on it, led up a steep hill to Heaven and its bliss; upon the left, the "wide" path, crowded with travellers and lined by dancing halls and other places of amusement, led into hell, in whose flames were to be seen devils with tridents and forks. On the other side of the sheet the Savior was pictured upon the Cross; and below this was an open coffin in which lay a corpse covered with wriggling worms. The sheet was, of course, supplied with words appropriate to the representations, and could be folded in the form of a letter. Its name was, "The Heavenly Letter."

In spite of, partly perhaps because of, the rigid moral and religious atmosphere at home, I yet had the deplorable misfortune, when I had reached my fifth or sixth year, to be seduced by the daughter of a neighbor, she being more than twice my age. My parents knew nothing of the dangerous environment into which I was so early brought, for the girl herself, with whom I was allowed to play, and her parents also, seemed to be thoroughly respectable and moral people. Fortunately these people moved from our neighborhood soon; but this early sexual knowledge was, a few years later, the cause of a very strong religious commotion in my mind.

In consequence of my religious education, I remember that in my eleventh year, I was one night troubled with the thought, "Where I would go, should I happen to die in the night." A year later, when learning the catechism of my

church, I had to commit to memory Revelations 21, 8. In that passage occur the words: "The fornicator's part shall be in the lake that burneth with fire and brimstone." I became fearfully frightened, for I remembered that early seduction. In addition to these words which I had learned, I had upon another occasion learned the passage,— "Confess your sins, one to another." James (5, 16).

Thereupon I was tormented, not merely by the terrible fear of hell which befell me, but also by the thought that, according to this passage, I was under obligation to confess what I had done. The state of my mind may be readily understood by the fact that I was one day almost induced to cut my pulse with scissors in order to end my mental anguish.

Following a long struggle with shame, I wrote the confession of my sin upon a slate and gave it to my father, who of course from his standpoint viewed this matter as a special work of the Holy Spirit and tried the more to feed my thoughts with religious nutriment and literature. So fearfully disturbed by the terrible idea of the burning pit and the struggle with shame had my emotions and nerves become, that from this time my mind became morbidly inclined. Among the religious books which I now read was one entitled, "Stories from the Kingdom of God," with examples illustrative of Bible passages. One of these examples had reference to the "unpardonable sin," and Francesco Spira[1] was referred to as one who had committed this sin.

The story of Francesco Spira as I read it in that book was enough to shake the nerves of the most healthy and normal person; how much more fearful, then, must have been the impression made upon my mind which had already and very recently been shaken up so terribly. The pangs of conscience that Spira had experienced, his despair, the impossibility of consoling him, his death, accompanied by the unearthly cries and bellowings with which he broke out,

[1] Francesco Spira was a Venetian lawyer of the sixteenth century, who had become a Protestant, but who afterwards when under trial for heresy, impelled by fear and by consideration for his wife and children, denied Protestanism, in consequence of which he was seized with terrible pangs of remorse. These brought with them sickness from which he died in the greatest anguish, despairing of God's grace for what he had done. His case has always been a stock story in Protestant religious circles as a warning in regard to the "unpardonable sin."

were described in the most vivid manner. Now I became haunted by the idea that I might commit the sin of blasphemy against the Holy Spirit, "the unpardonable sin," although I did not really know in what it consisted.

The fear that I might commit the "unpardonable sin" created in my imagination all kinds of blasphemous expressions,[1] which I seemed to hear and which I was to express with my mouth. In great anguish and with spasmodic effort I shut my mouth, so that I might not utter them, for I believed the devil beside me, tempting me to commit the "unpardonable sin." While running and jumping in my play with other boys, I was thus haunted, and all real zest for play was naturally gone for me.

I struck and kicked against the invisible arch-fiend, and my father to whom I told my fears, could but say that it was peculiar, that one of his sisters had been troubled also by similar fears. Moreover, he reproached me for fighting the devil physically, that is, for striking at him with my fist and kicking at him; I should, he thought, fight him spiritually, namely, with prayers. He seemed to have not the least idea that all this was derangement of mind, and from his religious and pietistical standpoint he was naturally unable to look at my troubles in a scientific and rational way.

The idea of the "unpardonable sin" which haunted me so early in my youth, left its effect upon my nervous system until very late in my life. At times the old ghost whispered blasphemies into my ears and I had to close my mouth tightly not to express them. In the days of my boyhood, when this fear had somewhat worn off, I was troubled for a time by anxiety lest I might become the Antichrist. I had heard sufficient about the Antichrist in the religious circles in which I was brought up, the members of which believed in the advent of some human individual, who would become the incarnate Antichrist.

On the other hand I had become extremely timid in another direction. Until that religious shock which had upset me, I had been heedless like other boys, troubled, for example, by no excessive fear of bathing, nor lacking courage

[1] Compare with the story of Bunyan as analyzed by Prof. Josiah Royce, "Studies in Good and Evil." Goethe also remarks, "I have known several who although otherwise rational in thought and life, could not get rid of the idea of this sin and the anguish of having committed it.

in a fight with other boys. Now I became extremely cautious while bathing, and my former pugnacity deserted me. I became, furthermore, hypochondriacal and troubled about my health, imagining myself to have this or that disease. This was, of course, a consequence of my unsettled state of mind. After a time this attitude of mind disappeared, and I became more natural again. In this natural state, like all other boys, I showed now and again stubbornness, willfulness, carelessness and heedlessness in small matters; and this tendency furnished to my father occasions for talking to me about my former confession, and for warning me to beware of a spiritual relapse,— a procedure which each time made a fearful impression upon me.

I now pass to another eventful period of my life. When, in my fifteenth year, the sexual instinct awoke in me, like all other boys I noticed it with pleasure. But this and the danger of falling into abnormal sexual practices was soon put a stop to by a book[1] from my father's library which came into my hands. This book, written by a well-known divine of those times, was entitled, "Warning of a Friend of Youth from Secret Sins." In this book the effects upon body and mind brought about by youthful errors were pictured in the most horrible light. It was filled with the strangest stories of the physical and mental wrecks of boys and girls, and I was fearfully wrought up about it. There was, of course, no further thought of a natural view of the sexual instinct, but rather a fear of it. I became very chaste from fear of the horrible consequences of a lapse from virtue.

Several years passed by, and I had been put into a boy's school,— an orthodox and pietistical establishment. Although I had been but poorly prepared for this school, nevertheless by hard study, I got on with my class (one of the higher) although by private lessons, I was compelled to make up within half a year, several studies at which my classmates had already worked for a considerably longer time. In spite of the hard work I had to endure, I was scrupulously honest, and would give not the least thought to the use of dishonest means in written examinations, although my classmates laughed about my scruples.

[1] "Modern Tendency."

With my eighteenth year a new stage and the most unfortunate one of my development began. I had till then, not experienced the normal physiological consequences of puberty. Since reading that book I had watched over my sexual instincts lest there should be any cause of excitation. My present experience alarmed me and I imagined that I felt already the weakening of my brain power. Moreover I considered myself a very immoral person. In order to prevent a recurrence, I had recourse to religious readings and became ascetical, at times even like a monk. Thus I tried to sleep on a bare board, because I had read so much about the voluptuous dangers of soft beds, although mine was none too soft, being made of straw, covered with a sheet.

During these anxieties of mine, it happened that we were called upon to read in class, twice a week, the Epistle of Paul to the Romans, in the original text. One evening while preparing myself for this study, I read in chapter five, the passage,— "Through one man sin entered into the world, and death through sin; and so death passed into all men for that all sinned." The exceedingly gloomy import of that passage struck me forcibly and a bitter feeling arose in me concerning man's fate, from his birth onward, in consequence of his ancestors' fall. Immediately I fell into the greatest anguish for having had such an impious thought, and could not sleep throughout the night. The gloomy idea expressed in that verse of Paul, the idea of original sin and depravity, the absolute slavery of the human will so vividly described in the Epistle to the Romans, coupled with the gloomy state of mind in which I had been thrown on account of my recent sexual experiences, together with the struggle to believe the inspired word of God as it was taught to me, threw me into a state of mind such as I had never been in before. It seemed to me as if a thick dark cloud were actually about my brain. At times I disbelieved in my own existence[1] and thought that everything about me was only a delusion. At other times suicidal thoughts came to me, either when I was standing at the open window of my class-room in the third story, tempting me to hurl myself down, or when near

[1] Sense of unreality, so much discussed of late.

the railway to throw myself beneath the wheels of the fast approaching mail train.

But the worst was yet to come. Having dragged through such an existence for almost two years, pursuing my studies as best I could, I took the next step downwards in my disease. The thought had long been hovering about my brain,—"What would have become of me had I not read that book of warning when I was fifteen?" I imagined that surely and inevitably, I should have become one of those physical and mental wrecks which that book pictured. I fancied myself so depraved, so weak in will-power, that I thought it could not be otherwise. The very doctrines of the church, the many passages of the Bible and especially the Epistle to the Romans, teaching original sin, natural depravity and the slavery of the human will, seemed to lend support to the teachings of my fevered thoughts. Had I not learned in the Catechism the words, "Man is depraved since the fall, therefore unfit for anything good, but ready for everything bad." The idea of many devout persons, that they have been preserved from an immoral and bad life by a special grace of God, an idea which is a consolation to them, never entered my mind. My demon finally drove me to make true what I imagined would inevitably have come about had I not read that book. I gave myself up to sexual excesses, not for the pleasure of them, since in my case this was impossible, but to make true what I thought would have been my fate. The thought also ran along with the course I now took that perhaps if I should feel the full effects of my excesses, I might wake to true repentance and conversion, which as yet, I believed myself not to possess. Having yielded once to my demon, I fell into his clutches more and more. For several years I followed him, not with pleasure, but with the utmost repugnance, and under the continual lashing of the tormenting idea, that I should make true the fate I should inevitably have arrived at, as I thought, but for the reading of that book. My demon almost drove me to the most revolting actions, not, be it understood, because of beastly passion, but because I fancied I might have sunk even as low as that. Imagine the anguish and torments through which my crazed brain had to go, in order to withstand such thoughts!

Often I decided to cease following the path I had now set out upon, but the demon who had gotten me into his clutches, always knew how to keep me in my course, by telling me that I would not now have decided to stop what I was doing, if this or that external accidental occurrence, this or that thought fitting my condition and heard or read by me somewhere, etc., had not brought me to this decision. Thus every step on my part to stop my practices was represented by my diseased brain as a step, originating not from myself, but from some external cause, which came accidentally in connection with me. Hence I was impelled to believe that I would have continued in my present ways but for this cause. There were ways innumerable, which I cannot here describe, by which I was prevented from changing my course. Therefore in despair I continued in it, the sport of my diseased brain, with no power whatever to resist. No fits of wrath or curses, in which at times I broke out against my tormentor, were of any avail; again and again I had to submit to him. I conceived myself to have not the least spark of anything good or rational in my nature; and I further believed that I could not of myself have taken any initiative step altering my course in life.

Under these circumstances, my studies in school naturally suffered in such a way that they had to be given up entirely, and I was driven to engage in manual labor. This outward change in occupation effected no change whatever in my mental condition; it continued as before. My manual work received therefore only a dispirited attention, for my disease was continually weighing upon me.

Finally I got rid of the despotism of my demon in a way which proves that his tyranny was submitted to with no pleasure on my part, but rather with the utmost repugnance. My insanity had spread from the one point it started with to other points as well. At school even, this tendency had shown itself in this, that when I was obliged to write an essay upon some subject, embodying the thoughts of others which I had somewhere heard or read I was nervously troubled by the idea, that had I not accidentally known of these thoughts, I would have had few of my own; and thus was set forth my intellectual poverty and lack of

originality. I considered myself to be, intellectually as well as morally, without any good properties of my own.

My disease began now to trouble me about the most insignificant affairs. I was continuously in mental excitement about what might have been very small matters; numerous questions about which a normal mind gives itself no concern, were to me a source of great torment, so excitedly did my attention fasten itself upon them. To make this clear, I will give an illustration. How often does it happen that small causes prevent accidents! Thus it has often happened in my experience that a large, heavy book, say a dictionary or some article that might easily be broken, having been displaced through some accident and in the act of sliding from the table, has been caught by my eye at the right time and so has been saved from the fall. The fall had it happened, would probably have damaged the book or article. An affair so insignificant as this, and the thought of what thus might have been, could torment me to such an extent that actually, after a long fight, and merely to get rid of the torment, I sometimes let the book or article fall, to see what result would follow.

My insanity had to reach its climax. In my youth I had often been told not to drink so much water at table or elsewhere, since such practice was extremely unhealthy. I do not remember that I ever did at that time really drink much water; but a lady related to our family, hypochondriacally anxious about her health and always talking about what was and what was not healthy, had, even at that early age, an infecting influence upon my mind in this respect. One summer, at a much later period, when many people had become sick from one or another cause, I happened accidentally and unluckily to hear an old doctor speak about the unhealthfulness of drinking too much water. This was the sign to me in my crazed condition, to begin to drink more water than I should have drunk had I not heard about this danger.

Imagining myself not to have sense enough to know when to stop drinking water, and believing that perhaps I would have brought upon myself a sickness, such as was then very common, if I had not been warned by the doctor's words

against the immoderate use of water, I began, in order to quiet this insane fear, to drink enormous quantities of it. A friend, noticing this criticized the habit. This made things worse, for the fear that if this friend had not accidentally seen my act and criticized it, I would have drunk still more, was a further incentive to continue in my mad doings. Again and again, with the utmost repugnance, I filled my stomach with water; and the more I did it the more my nerves became insanely excited to keep up this state in order to bring about the feared result.

The same friend, once again noticing me drink so much water, now told me I was willfully and deliberately tempting God, and committing a great sin. His words stuck in my mind. On the one hand, of course, it tended merely to excite in me more and more the insane fear that but for these words I would have gone on in my mad course, and I was inclined to continue my water drinking. But on the other hand the thought now laid hold of me to desist from this because it was not right. And so at last, I stopped this habit, and at the same time succeeded in suppressing the perverted sexual practices and various other acts which I had been doing, incited thereto by nervous fears and torments. To make this complete change was not an easy task; it was rather a fearful struggle. Even though I had done all those mad acts with the utmost repugnance, wishing at heart to get rid of my insane compulsion, because I had lost absolutely all belief in my rational and moral powers, I could not believe that I could have made any change in my mad course, through any initiative of my own.

The idea, even to this day, is firmly planted in my mind,— and I cannot get rid of it,— but for that friend's word, I would never have come to the thought of the moral wrongness of my doings, but would have continued in them. Again and again I had to contend against this idea, in order not to fall into my old course, which happened occasionally nevertheless. But I always roused myself from my backsliding by the thought: What you are doing is morally wrong. This was the only thought that time and again wrested me from my returning insane fits. The thought of the irrationality of my doings never kept me from them,

but only the thought of their moral wrongness. The thought of the irrationality of my acts was completely overpowered by the tormenting imagination of what might have been, just as, in otherwise normal persons, fear and anxiety sometimes overpower reason. In my case all this was, of course, considerably worse because my fears and anxieties had become something morbidly fixed.

ABSTRACTS

STUDIES IN PSYCHOPATHOLOGY. *By Boris Sidis, A.M., Ph.D. Boston Medical and Surgical Journal (in five numbers), March 14-April 11, 1907.*

A great general interest in psychotherapeutics has been recently manifested by the laity as well as by a constantly growing number of medical men. The extent of the interest is so widespread that it threatens to degenerate into a mental epidemic. In fact, one church helped by physicians has already taken up the work and patients are being treated by the church officials. Unfortunately, such activity on the part of physicians may retard the progress of psychotherapeutics. What is true of diseases in general is also true of mental diseases. We can not hope to develop a rational psychotherapeutics without a scientific study of the pathological conditions. An effective psychotherapeutics can only be the result of a thorough scientific study of psychopathology. Dr. Sidis' "Studies" are therefore timely and should stimulate those interested in abnormal psychology to a close, careful scientific analysis of the cases they handle.

Dr. Sidis has rendered by his "Studies" a great service to all workers in the field of psychopathology by bringing unity into the great confusion of classifications and subclassifications of the various groups of insistent ideas, imperative concepts, emotional states, various phobias, motor tics and psychic attacks usually classed as "psychic epilepsy," meaning the psychic equivalent of epilepsy. He applies the psychobiological principle of recurrent moment consciousness which he has worked out at great length in his former works, more particularly, in his "Psychopathological Researches" and in his "Multiple Personality" to a group of cases of functional psychosis which he analyses with great detail and precision. All the manifestations of the symptom complexes of his cases including insistent ideas, imperative concepts, phobias, emotional states, and psychomotor attacks, all these are shown to be the manifestations of recurrent disaggregated subconscious states. The disaggregation of consciousness may have taken place in the early life of the patient and the dissociated states thus formed may have remained dormant. When once set into activity these subconscious

states recur either periodically or exist continuously in consciousness, to the agony and discomfiture of the patient. These recurrent states are characterized by their sudden onset, their violence and by their excessive amount of energy. Each attack is an exact reproduction of every other, both in its content of consciousness and in its psycho-motor reactions. The symptoms of which the patient complains appear to him meaningless and unintelligible, he can find no explanation for them. Nor is it always possible to find an explanation for these symptoms by the most careful scrutiny into the patient's life and his environment, inasmuch as the subconscious states producing the symptoms may have been disaggregated in early childhood and have completely lapsed from the patient's conscious memory.

To effect a cure the disaggregated subconscious states must be synthetized with the rest of the patient's mental life. Such a synthesis re-establishes the associational relations and inhibits the activity of the states formerly dissociated. The synthesis is not that of the Breuer-Freud cathartic method, it is accomplished by various methods, all based on the principle of subconscious reserve energy.

The method which Sidis has used so successfully in the number of cases he reports is what he terms the method of hypnoidization, a method not to be confused with Janet's or with Freud's methods. Briefly stated it consists in placing the patient in a quiet darkened room in an easy relaxed position and have him listen to a monotonous sound. The patient is then required to tell what passed through his mind when he listened to the sound. Fragments of long-forgotten experiences will flash through the patient's mind, and by piecing together these fragments a complete account can be obtained which will explain the otherwise unintelligible and whimsical symptoms. The state induced by this method Sidis designates as the "hypnoidal" state, a state which is between waking life on the one hand and hypnosis and sleep on the other.

But what is the mechanism by which these dissociated subconscious states invade the patient's conscious life and give rise to the variety of manifestations? Why this sudden periodical recurrence of these pycho-motor states? Whence comes their violence, displaying an energy which the patient is normally incapable of manifesting?

To answer these questions Sidis utilizes the well-known physiological conceptions of threshold of stimulation and that of inhibition. Living matter reacts to stimuli of a certain minimal intensity; if the intensity is diminished below the minimal, no response will be obtained. Moreover, with the process of evolution and differentiation the stimulus must be of a certain quality. A highly differentiated sense organ will respond only to stimuli of certain quality while it will not respond to other stimuli. These same conditions hold true for psychophysiological systems. A psychic group to be set into activity requires a stimulus of certain intensity and certain quality. As the psychic elements become organized into greater and greater complexity, another important factor, besides intensity and quality of stimulus, has to be considered, namely, the factor of inhibition. As a moment consciousness enters into associations with other moments forming groups of great complexity the threshold is raised. A stimulus which would have set the isolated moment into activity will no longer bring about a reaction because of the inhibitory effects of the other moments with which it is associated. But this rise of threshold of the individual moment consciousness by virtue of its association with other moments does not diminish the opportunities for activity of the moment consciousness. For while it is true its threshold is raised, it has now, however, by its very associations with other systems a greater opportunity of being stimulated, each new association forming, as it were, an additional avenue for incoming stimuli. The inhibition due to these associations serves another useful purpose, inasmuch as it prevents undue discharge of energy, and thus prevents a state of exhaustion.

Now if a moment consciousness is dissociated it is not inhibited, its threshold is low, and once a stimulus reaches it, it will react with all its sum of stored-up energy, hence the violence of the recurrence of psycho-motor states.

At the conclusion of his paper Sidis works out the principle of reserved energy which he points out is of such great importance in development of the race, a principle of the utmost consequence in normal and abnormal psychology. The inhibitions keep the discharge of energy on a physiological level and permit the storing of energy which may be utilized by the individual and the race in certain emergencies. This reserved energy of the

individual may be utilized in the treatment of functional psychosis. The inhibitions and thresholds may be too high, making the stored-up energy inaccessible. If, however, by various methods, of which hypnoidization is one, we succeed in diminishing the inhibitions and lowering the threshold, we may liberate some of the individual's reserved energy requisite for the reassociation of the dissociated systems, for the re-establishment of the equilibrium of the patient's mental life.

The paper on the whole is exceedingly stimulating and will be of great value to the psychologist and to those interested in psychopathology as it establishes unity in the present confused state of psychic epilepsies, insistent ideas, phobias, etc.; all these complex manifestations are reduced to the same general principle, *the recurrence of psycho-motor states.*

The principle of reserve energy developed in the paper may likewise open new vistas in the domain of normal and abnormal psychology.

H. LINENTHAL

AMBULATORY AUTOMATISM (CLINICAL OBSERVATIONS). *By Dr. Paul Courbon. Annales Medico-Psychologiques, January–February, 1907, pp.* 22.–48.

Owing to the constantly growing importance, not only from a psychologic but from a medico-legal standpoint, of cases of this sort, we reproduce the author's five clinical observations for the purpose of adding to the list of recorded cases. We shall in nowise comment upon his diagnoses, or upon the nosologic status of his material.

1. — *Mnesic hysterical fugues taking the place of malarial attacks*

The patient was a male, age fory-one and a half years, a pedler; and was taken into Villejuif May 15, 1906. Family history was negative as to nervous and mental disease. The only noteworthy thing about the personal history was that he had never had any children's disease and that he was an inveterate truant during his school career. He excused this on the ground that he was afraid of the teacher, who was cross, and insisted that his escapades were not the result attaction for vagabondage. At the age of thirteen he chose the trade of a pedler and pursued it with success. He was for five years a soldier in the foreign service, where he contracted

swamp fever and indulged somewhat excessively in alcohol and absinthe. He never had any venereal disease. At the end of his military service he went housekeeping and took up his business which he has never since relinquished. He had been in France several months when he had an attack of malaria with delirium, which kept him in bed for forty days at Bordeaux. This was the only attack of the sort he ever had. From that time on his sleep was broken. He would awake with anxiety and palpitation of the heart. He also had nightmares, in which he saw pass before him the disturbing scenes to which he had been a witness during the day. He would talk in a loud voice and, in the morning, remember the dreams in which he talked aloud, retaining absolutely no memory of others. Every fall and spring, in periodic fashion, he would have the following form of attack: if he experienced some sort of rebuff, he would, for a day or two following, appear sad, avoid discussions and brood over his trouble. His nights became more and more restless, until, finally, during one of them, he would awake with a start, get up, dress hastily and start off. He would walk for kilometers straight ahead, haphazard, without uttering a word or inquiring of anybody the way. Cold, rain, fatigue, hunger and thirst did not stop him. After a tramp of from twenty to thirty kilometers he would feel a hot wave pass over him and would be seized with a desire to undress himself, so powerful that he would not have time to undo his clothes. He would tear them off, and, not content with this, reduce them to tatters. This destructive act, of which he remembered all the details, would assuage him. At last, with hardly a stitch to his back, he would lie down and doze off to sleep; but cramps and tingling sensations in the legs would soon compel him to get up and continue his route. To turn back was impossible.

This vagabondage would last several days and, while it was on, he avoided all enclosed places, of which he had a horror. He would eat as he walked along, and, when overcome by fatigue, would sleep by the wayside. He would take public carriages or trains without asking the destination and would keep obstinately to himself while traveling.

Finally, after a lapse of time, varying from twenty-four hours to four days, the excitement would pass away; he would feel an increasing lassitude, make a halt and sleep for seven or eight hours by the wayside. On awaking, he would have a headache, but would have regained entire possession of himself. His first wish was always to rejoin his wife, but he frequently found that he had either torn up, or lost, his money during the attack. On occasions he was arrested by the police, but was always released on telling his story.

If his wife, foreseeing the fugue, locked him in the house, he would walk up and down without violence. He was docile and never threatened violence or committed any unlawful act. The actual fugues were sometimes replaced by hysterical equivalents, such as the "globus hystericus" and a desire for the open air.

In his last attack, the patient was arrested near Melun. His clothing was all torn and his speech incoherent. In his certificate of admission to Sainte-Anne, it is stated that he had hallucinations. He replied politely and intelligently to questions put to him, and, after several days of observation, was put to work in the shops of the institution, where his conduct was exemplary. On examination we made out the following peculiarities: over the whole right half of the body and the face sensibility was very much diminished; it required several successive pin-pricks to produce a sensation. The pharyngeal reflex was abolished, that of the cornea markedly diminished. The pupils were equal and reacted promptly. There was a marked limitation of the visual field, without dyschromatopsia. The patient complains of trouble with the sight of the right eve, but attributes it to a lash of a whip, which flicked the cornea ten years before. No evidence of this is to be found. Pressure exerted on top of the cranium brings out the pain of the so-called "hysterical nail." There are no other hysterogenic zones. The testicles are retracted into the inguinal canal; he has never begotten any children; his sleep is disturbing to the others in the dormitory, and he wakes them by the chatter which he keeps up.

2.— *Hystero-epilepsy with somnambulistic fugues*

Patient was a male, age twenty-two years. Family history not important. Previous history.—Patient had never had convulsions nor any of the children's diseases. He was sent to school at the age of three and remained there until his thirteenth year without having learned even the alphabet. He was then sent to work and tried his hand at several trades in succession. At the age of fifteen he began to learn reading and writing under the tutelage of his employer's ten-year old son. His entire course of study did not exceed a period of six months, but he learned enough to be able to read a story and to express himself in writing. He made some pretension to a knowledge of German, but this knowledge in reality consisted of a few commonplace words, badly pronounced.

His temperament was impulsive and he was cruel both to humans and to beasts. He frequently caught mice with his hands, bit off their heads and swallowed them. He could give no reason for such

acts, but denied that there was any pleasure in it and often denied knowledge of his acts.

At the age of sixteen his fugues began. These consisted of ambulatory phenomena, complicated by various thefts. The latter were, however, not performed while the patient was in an automatic state of consciousness and he admitted, under arrest, that he had consciously planned them, often in company with other criminals, whose acquaintance he had made in jail, although the *rusé* prisoner tried to place his acts to the account of his disease (!).

In the asylum where he was placed, he was docile and committed no violent acts, although he had quarrels with his fellows. He consorted by preference with the grumblers and was mixed up in various schemes to upset the discipline of the place. Taken in *flagrante delictu*, he would, after a feeble attemp at resistance, not only abandon the plot but denounce his accomplices. Books did not interest him, but he liked to help the nurses. On examination here was found a diminution of the corneal and pharyngeal reflexes.

3. *Alcoholism. Fugue*

The patient was thirty-four years of age and a mechanic by trade. The family history not important. Patient had had no special illness in childhood. He did a military service for three years in Brittany. On leaving the regiment he married and did well for five years. He then drank excessively, had domestic infelicities, which ended in a divorce and his departure for Paris. There he quarreled with his employer and drank heavily. On a certain night he returned home quite early and went to bed. He had hardly got into bed when he heard threatening voices and a knocking against the wall. In terror he barricaded his door and waited for morning to come. He then aroused the concierge, got himself let out and started to walk without knowing where he went. His memory of this fugue is not dependable, but he thinks it lasted three days. He has fragmentary memories of places slept in and work sought for. His nights were full of visions of menacing figures, and threatening voices. On one occasion, just before dawn, he saw the air full of balloons and air ships and in one of them a Chinaman, who said things to him which made him laugh inordinately. He mistook a big block of stone by the roadside for an automobile and tried to start it, but, at this point, was seized by a gendarme.

While under civil detention, he was disoriented and heard voices saying, "There's the lunatic"; he also heard threats made against his life, and pistol shots. His hallucinations gradually wore

away, and he worked steadily for a month in prison making pocket-books. On his transfer to Villejuif, his delirium had passed; he was docile and coherent and always told substantially the same story. Physical examination showed only a slight tremor of tongue and fingers.

4. Dementia Præcox. Fugues

This patient was aged thirty-four and was also a mechanic by trade. The family history was bad. A paternal great-uncle was an idiot and a paternal great-aunt an imbecile. His mother was the daughter of a confirmed drunkard and died six weeks after the patient's birth, of galloping consumption.

At school he showed only limited intelligence, but could read, write and count. Apprenticed to a mechanic at fifteen, he earned a dollar a day and was known as a good, reliable workman. His domestic life was normal and he did not frequent the cafés. Entering the army, his conduct was exemplary for two years and he reached the grade of corporal. He then became neglectful of his duties and was guilty of so many silly acts that his relatives were notified that the patient had completely changed and was acting more stupidly every day.

One evening he was an hour late for roll-call, and an under-officer having inflicted a punishment upon him, he immediately turned about face and disappeared for six days. At the end of this time he reappeared in a demoralized condition with a trumped-up story as to what he had done during his absence and the reasons for his return.

Examined by the doctors in the regimental prison, he was found to have rudimentary delusions of persecution. He was finally discharged from the service and taken home by his relatives, where he lived a purely vegetative existence for ten years. The first three years of this time were marked by successive fugues of several days' duration and characterized by complete disorientation with complete amnesia. He became more and more demented and dirty, and at times remained in bed for days at a stretch. He was in turn euphoric, persecuted and excited, and, on one occasion, attacked the aunt who cared for him. On account of this he was committed. In the hospital his disease continued its progress. Under surveillance he was able to perform for a time the most elementary menial duties, but grew too demented, noisy and dirty for even these. Physical examination showed markedly unequal and sluggish pupils but no exaggeration of the deep reflexes. The apex of the left lung showed suspicious signs, but there was no cough, expectoration or hemoptysis. The bodily condition was, on the whole, excellent; the appetite good; the weight satisfactory.

5. Feeble-mindedness. Fugues. Limited Responsibility.

V. G., age eighteen years, a volunteer in the "Chasseurs d'Afrique," came under observation at the military hospital at Algiers. The family history was negative. He had had meningitis at the age of two and typhoid at six. Of a congenitally feeble turn of mind he learned little or nothing in school, where he remained till the age of eleven, when he became an apprentice to his father, a contracting mason. On several occasions, he left home without warning and was gone for seven or eight days. He had been enlisted but for a short time when he deserted and returned home. His parents had him arrested. Owing to his brief connection with the army he was not court-martialled. A second enlistment was followed by a second desertion and return to his home. His parents again had him arrested. On being brought to an accounting and transferred to the hospital for observation, he said he had yielded to a sudden impulse to get away. At the hospital the reasons given by him for his fugues were always plausible, although often contradictory. No evidence of insanity, epilepsy, or hysteria was found, but the delinquent was adjudged to be mentally weak and only partially responsible. Assigned to a regiment at Toulon — near his home — his conduct became normal, the fugues ceased (*sic*) and he seemed thoroughly satisfied with his lot.

J. W. COURTNEY

BRIEF NARCOLEPTIC ATTACKS NOT DUE TO EPILEPSY. *By M. Friedmann. Deut. Zeitschrift für Nervenkeilkunde. Vol. XXX, pp. 462- 492, 1906.*

Friedmann's article is of importance as it represents a growing tendency to recognize that amongst the cases generally classed as epileptic, there are to be distinguished certain groups which are of a distinctly different pathology [see article by Dr. W. G. Spiller in this journal, Feb., 1907]. His article is also of value not only because of his careful analysis of his cases, and those collected from the literature, but also because of the large number of cases (fifteen) which he has studied, some of them for many years. Therefore his conclusions in regard to this condition are worthy of careful consideration. In the first place, he limits the term narcolepsy more strictly than has been done by many writers, reverting to the type of case described by Gélineau in his original article published in 1880. In these cases we have to do with a partial disturbance of consciousness usually of very short duration,— a quarter or half a minute, up to two or three minutes — often described by patients as a dizziness,

though this is never really present, during which there is an inhibition of the processes of thought, and usually also of voluntary movements, with complete retention of the recollection of what is passing at the time, followed by immediate restoration of the functions of the brain, and without any period of confusion or of shorter or longer sleep, such as occurs in epilepsy. He excludes from the class of narcoleptic attacks, the cases which have so frequently been described under this term, in which the symptom is truly one of sudden attacks of pathological sleep. Such attacks he regards as occurring in neurasthenia and in hysteria, as well as in the course of various general diseases, as diabetes, heart disease, and brain tumor. These attacks are usually of longer duration than the ones he is considering and are generally followed by amnesia. The short absences of which he writes have also been confounded with procursive epilepsy and the epileptic confusional states. He regards the best method for differentiating these attacks from such epileptic conditions to be extended observation of the case, but also thinks important criteria are the absence of unconsciousness, and the fact that in these attacks the "sleep" appears first, and the weakness of the legs later, while in the epileptic cases the reverse is true. He also attaches importance to the fact that in his cases he was unable to bring on disturbance of consciousness by compression of the carotids.

In his paper Friedmann gives more or less fully the details of fifteen cases which he has observed, and considers nine others from the literature. In all of these there were a great similarity in the attacks. The eyes were turned up and immovable, with somewhat dilated but reacting pupils, there was an inhibition of thought, with retained consciousness, and either an absence of movement, or a repetition of the last movement, sometimes a paralysis of movements of the extremities, but without fall, usually the preservation of the balance being undisturbed, but occasionally some staggering being seen. The attacks were sometimes preceded by a vague sensory aura, some of the children calling out, "It is coming." The duration was brief, and the restoration of the faculties immediate, and without dizziness or other abnormal sensations. The attacks seemed to be precipitated in many instances by excitement, but often occurred during eating, and in a number of cases during sleep, when the patient would be awakened, or else they appeared at the moment of wakening, Friedmann being unable to satisfy himself in regard to this point. The attacks varied in number from one a week to a hundred or more in a day. In several instances they lessened very markedly in number during an intercurrent illness, or while the patient was confined to the bed by some injury which did not affect the general condition. The influence of these

attacks upon the health, both bodily and mental was small, and Friedmann contrasts this with epilepsy. Adenoids were seen in some cases, but could not have been a cause, as several times the attacks first appeared after an operation for their removal.

Friedmann divides the cases into primary and secondary. In three children and four adults there were no other symptoms. The secondary form, where there are as a rule neurasthenic symptoms, disappears with the other symptoms though the attacks may persist from a few months to a year and a half. If they persist for a longer period, we should regard the trouble as primary. The primary cases are obstinate, some showing no improvement after the attacks had lasted seven to fourteen years. In one case after eight or nine years the attacks became less frequent. Other cures are somewhat doubtful.

Accepting Friedmann's division of these cases from those of attacks of pathological sleep, which seems a useful one, though we may doubt the advisability of his attempt to limit the term "narcolepsy" to these cases, rather than to coin a new one, and thus avoid the confusion of two classes of cases, which should be kept distinct, we should note especially his division of cases with this symptom complex into primary and secondary. It is a service to have shown that such a momentary inhibition of voluntary thought and movement may occur in neurasthenic conditions. On the other hand, his contention that his primary form has nothing to do with epilepsy seems very doubtful. The distinction upon which he lays most stress, the absence of amnesia, appears extremely doubtful, when we consider how in cases of epilepsy in which mild attacks alternate with severe ones, the presence or absence of symptoms once considered characteristic may vary. Against his view may be urged a variety of other circumstance, such as the fact that in his primary cases he almost invariably found a strong neuropathic taint in the family,— his being found in three out of his four cases occurring in children, while the fourth case had had frequent convulsions in infancy. Once a cousin had had similar attacks, which were also found in the ascendants, while in other families epilepsy had occurred. Among the cases beginning in adults about half had a history of nervous disorders in the family. One of his cases is significant in this connection. This was his ninth case,— in a boy of eight years who had had convulsions up to the age of three years, especially with any infectious disease. The attacks of narcolepsy began at the age of five, were characteristic, very frequent, from ten or twenty up to one hundred a day. He never fell, even when an attack came on while he was in a tree. During them he stopped speaking, but continued movements automatically and had no amnesia. These

attacks lasted some eight or nine years when genuine epileptic attacks appeared. This boy would occasionally pass urine during his attacks, although there was no complete unconsciousness. Because of this case Friedmann admits that in rare cases narcolepsy may eventuate in epilepsy.

His other criteria of difference from epilepsy is that the condition is little influenced by bromides, that it often ceases during confinement to bed by intercurrent disease, or other reasons, that only the thought and will are affected, and that the general effect of long years of the trouble is so slight, as well as his opinion that the attacks are easily aroused and easily repressed, will have little weight with physicians who have had large experience with cases of *petit mal*, where these are undoubtedly epileptic in character. On the other hand, such persons will lay more stress upon things which Friedmann passes over lightly, such as the occurrence in persons with neuropathic family history, the occasional appearance of loss of control of the sphincters and the occurrence of attacks during sleep and especially the later appearance of undoubted epileptic seizures. Friedmann's careful study is valuable, however, in calling attention to the existence of this form of what we may call epileptoid attacks, which show but little tendency to develop into severe cases of epilepsy, as well as for his calling attention to the existence of secondary forms as a symptom of neurasthenic conditions, and especially in his making the differentiation between these cases and the various forms of pathological attacks of sleep.

J. J. THOMAS

HYSTERIA IN CHILDREN. *By D'Orsay Hecht, M.D., Journal of the American Medical Association, February 23, 1907.*

Hecht believes that, compared with the great amount of effort and study devoted to the analysis of hysteria in the adult, sufficient attention has not been devoted to that condition as it occurs in children.

As early as 1859 Briquet stated that juvenile hysteria was a common affection and comprised one-fifth of all cases of hysteria: while Bruns in his recent monograph on the subject, expresses the belief that this ratio is "not excessive, but less than the actual truth." Hysteria most frequently develops between the ages of six and puberty. Its great predisposing agent is the inheritance of a neurotic temperament, and it is quite as liable to occur in the poor and uneducated child of ignorant parents as in the pampered and spoiled child of the idle rich.

While hysteria in the adult presents a complex picture of anaesthesia, paralysis and attacks, its objective manifestation in the child is generally monosymptomatic, and a localized paralysis or paraplegia may be the only physical finding in a case. Hecht agrees with those who find the "glove" and "stocking" anaesthesia to be of rare occurrence in hysterical children, and he attributes this to the fact that the juvenile mind does not reason so readily that if there is motor paralysis of a limb one should expect paralysis as to sensation as well. Where disturbance of sensation is present in the affected member, it exists in the majority of cases as sensitiveness or hyperaesthesia.

Hysterical motor agitation in children is manifested by choreic movements, convulsive spasms and epileptoid seizures. Hysterical chorea is very common, and Bruns believes that a large number of recurrent choreas are but stimulations of previous *bona fide* attacks. The hysterical convulsion is "purely a psychic explosion attended with semi-retained consciousness, noisy, screaming, delirium, violent motor play in all directions, a peculiar chattering of the teeth, flushed features, resistance of the eyes on attempts at opening them, no aurae, no biting of the tongue, no involuntaries, and no personal injuries."

Reports of five cases are given illustrating the types of the disease.

Case 1 was that of a boy four years of age, of neurotic and overindulgent parents. A slight trauma to the arm gave rise to pain and excessive tenderness of the member, followed by spasticity and contracture at the elbow. The child made a great deal of fuss over the arm and refused to eat at times. Cure was effected by one application of faradism.

Case 2 was that of a seven-year-old girl who, during convalescence from scarlet fever, became subject to attacks of screaming and tonic spasm of the legs recurring nightly at the same hour. These seizures ceased to recur from the day she was isolated in a hospital.

Case 3. — A girl of four, who had been poorly disciplined by her neurotic parents, became overheated while playing in the kitchen, and fell in a convulsion which was apparently hysterical. Similar attacks followed on subsequent days, being precipitated by parental opposition. On recovering from one of her later seizures she found herself unable to walk. A cure

was effected by isolation and practical withdrawal of food for two days, at the end of which time bread and milk was placed in the room some distance from the bed. No trouble was experienced in making the child walk.

Case 4. — A girl of thirteen, of neurotic parents, became gloomy and despondent as she became pubescent, and fainting spells were of frequent occurrence. An attack of mutism, dysphagia and trismus was overcome by a subcutaneous injection of morphia, but shortly after this she was witness to an attack of puerperal eclampsia in her sister. A month after this experience she was seized with "epileptic" attacks which could be precipitated by pressure over the ovarian region and were inhibited by pressing the hand over the epigastrium. Treatment was not carried out in this case.

Case 5 was that of a five-year-old boy who as a result of a "cold on the chest" was left with a barking cough and aphonia, both of which had persisted some time. The cough was cured by induced anorexia, and the aphonia was overcome by one application of a strong electric current to the neck.

Hecht calls attention to the fact that the capacity in the young for autoimitation is great, and that the temperament of the child should put the physician on his guard. Too often a hysterical condition becomes grafted onto a trauma or a febrile disturbance, and its true nature is unsuspected.

The prognosis for recovery is far better in children than in adults, and this is probably due to the greater psychic susceptibility of the young mind to favorable suggestion.

The two methods of cure advocated by Bruns are presented by the author. (1) The Method of Surprise, and (2) The Method of Disregard. By employing the former the object is to overcome the hysterical manifestation by some sudden and impressive means and then to induce normal action before the patient has time or opportunity to reflect. In the use of the latter method, the physician and attendants must disregard the symptoms so that they shall assume less importance in the mind of the individual and fade away.

Coöperation of parents or isolation of the patient is of great importance. "When one is denied the intelligent and obedient coöperation of parents," says Hecht, "isolation becomes an imperative measure. Isolation to be complete and effective

means no visitors, no letters, no messages; in short, no reminders of the past. With no intent to deprecate the talent and skill of the trusted family physician, let it be said that he is not the best nor, as a rule, the last adviser in hysterical cases. This disease is not a grateful one for the family physician to treat. Strange surroundings, strange people and the strangest physician will exert the greatest good and effect the quickest cure."

G. A. WATERMAN

REVIEWS

THE PSYCHOLOGY OF RELIGIOUS BELIEF. *By James B. Pratt. The Macmillan Co. New York*, 1907. *pp. ix* + 327.

PRIMITIVE TRAITS IN RELIGIOUS REVIVALS. *By Frederick M. Davenport. The Macmillan Co. New York*, 1906. *pp. x* + 323.

These two recent contributions to the psychology of religion deal respectively with the psychology of religious belief of the individual and the crowd and are therefore, in a measure, antithetical to one another. Although purporting to be the purely normal psychological aspects of the question, yet each volume describes a mass of pathological phenomena, thus offering a complement to Dr. Moses' recent contribution, which I reviewed in a previous number of this journal. (Vol. I, No. 8, December, 1906). In Dr. Pratt's volume we see the combined results of psychology, anthropology and the history of religion. He defines belief as the mental attitude of assent to the reality of a given object and divides it into three types,— primitive credulity, intellectual belief and emotional belief. Parallel with these are his three divisions of religious belief,— the religion of primitive credulity, of thought or understanding and of feeling. All fully formed religious systems have evolved through these phases.

In the religion of Israel under the influence of Amos and Jeremaiah there was an evolution of the tribal Yahweh into the conception of a universal Deity, a kind of an awakening of the god-consciousness in the minds of the Jewish people. The phenomena of possession in the Hebrew prophets was the same as in all people at their particular stage of culture, and were

manifested by attacks of frenzy, of "sacred madness," often ending in complete unconsciousness. As in the Shinto and Buddhist beliefs, these phenomena can be interpreted as a kind of a dissociation of consciousness, a condition of auto-hypnosis, brought about by a severe emotional experience. Often these possessions spread rapidly from person to person, like a mental epidemic. Christianity also went through the three phases of credulity, feeling and understanding, that respectively brought forth the aspects of mediaeval Christianity, mysticism and the rationalism of the eighteenth century in England. In the middle ages authority was the one great basis of faith. The Christian mystics in many ways resembled their Hindu analogues, with their harrowing of consciousness upon one topic, thatof union with the Divine, their trances, visions and unconscious states. Individual mysticism seems to pass through three stages, meditation, contemplation and union.

All religious beliefs seem to have passed from the phase of primitive credulity to that of thought, this latter always striving for monism, as an expression of dissatisfaction with a plural divinity. This is especially well seen in the religion of India, a merging of many gods into the Absolute,— the all-knower but unknowable. This can only be explained by the characteristics of their leaders of religious thought, who held in scorn everything but pure reason. Their asceticism and emotional experience are interesting. The intensifying of a single central emotion finally reaches a state of complete unconsciousness, attention is fixed upon a single point and the sacred syllable om endlessly repeated. These are the trances of the Indian mystics,— auto-hypnosis in every sense — and its object was union or complete identity with Brahman and freedom from the bonds of flesh. Mysticism is the direct antithesis of possession and inspiration; in the former, the emotions are completely stifled, in the latter, they burst forth and run rampant. Thus we have two types of religious emotion — the violent in the Hebrew prophet and the calm in the Hindu mystic.

Modern individual religious belief is next discussed. The child passes through the same stages of religious belief as do the primitive races, from credulity, through conversion, spontaneous awakening, "the turmoil of the adolescent period" and finally the phase of reconstruction. On the basis of a questionaire,

impossible to summarize in the course of a review, he discusses at length, the question of mature adult belief in all its aspects. On the whole, the book occupies a rather novel field in religious psychology, but while it purports to discuss the normal aspects of religious belief, yet it contains much that is pathological, a phase which must enter into all thorough studies on the subject.

Davenport's book is an interesting contribution to the psychology of the crowd. It contains a minute account of all the important religious revivals,— the Indian Ghost-Dance, the religion of the American Negro, the Scotch-Irish revivals in Kentucky and Ulster, the New England awakening under the influence of Jonathan Edwards, the work of John Wesley and finally the more modern revivals in the United States. At the basis of all these are certain fundamental psychological laws, relating to the crowd and to the individual, such as suggestibility, imitativeness, imagination and emotion, all of which he summarizes in the phrase "sympathetic like-mindedness." The revival is a form of impulsive social action and like all peculiar social movements conforms to the law of origin, the law of spread through imitation and geometrical progression and the law of restraint. This latter, however, is absent in primitive religious revivals. A crowd is a group of persons in some form of mental agreement, governed by emotions and not by reason. Its mind is like that of primitive man.

The rhythmic character of the emotions and their motor accompaniments is of great interest in all revivals. Frequently hysterical phenomena make their appearance, trance, stupor, mutism, amaurosis, hallucinations, visions, such as in the Scotch-Irish revival in Ulster in 1859. Here sensory automatisms were predominant, while in the Kentucky revival of 1800, the chief characteristic was that of automatisms in the motor sphere, convulsive attacks, jerkings and excitement. In these cases, imitation and mental contagion play a great part. Revivals seem to arise either among uncivilized man or when the religious feelings of a civilized community had withered from disuse and reverted to a primitive condition. Of course, individual conversions have always existed, such as took place in Bunyan. Many revival phenomena were looked upon at the time as states of demoniacal possession and under these conditions the chief duty of the revivalist seemed to have been that of exorcist. These

possessed conditions were clearly dissociations of consciousness, as in the Hebrew prophets and the Hindu and Christian mystics. Fear, strong emotions, mental contagion and the strong personal influence of the revivalists, are the underlying mechanism in these religious revivals, and sometimes the suggestive personality of the preacher was used from its therapeutic value in casting out the demon which was supposed to have taken possession of the religious enthusiast. In all ages, from the Bacchanalian orgies to the nineteenth century, hysterical phenomena have been predominant in revivals. In the conversion by suggestion of crowds, there is no intellectual element, the person converted is overmastered by pure feeling without any logical inhibition. In all revivals, we seem to be dealing with pure examples of mental contagion and suggestion as a powerful factor in the psychological make-up of every crowd, whether gathered for the purposes of religious revival or of mob-violence.

I. H. Coriat

THE JOURNAL OF ABNORMAL PSYCHOLOGY

OCTOBER–NOVEMBER, 1907

A CASE OF DISORDERED PERSONALITY

BY RICHARD DEWEY, A.M., M.D., WAUWATOSA, WIS.

Summary: An incomplete alteration of consciousness of sixteen days' duration in a girl of twenty-three, with assumption by the patient of name of another person and a total change of hand-writing, the same being reversed both vertically and laterally; the state of altered consciousness being preceded by several months of pseudo-paranoia — apparently an evolution of systematized delusions, which were taken for facts, however, by her associates,— probably a hysterical or histrionic fabrication of the patient. Previous history of migraine, hysteria and erotomania, of homo-sexual character.

THE disorder of personality in the case here presented did not amount to complete double personality, certain memories being carried from one state to another. The history is fragmentary, embracing only the observations of three months with little previous or subsequent knowledge of the case obtainable.

This patient, Case No. 1727, an unmarried woman, aged twenty-three, born in Germany, was an under-graduate in a nurses' training school. The family history as far as obtained is negative except that the mother was eccentric and died at thirty-five. The patient was subject to severe migraine from her nineteenth year and to aggravated insomnia. She was apt and skillful in the training school; her ward duty was severe, and there was much additional strain for her in the training-school course, the written tasks in English being very difficult to her from imperfect English education, though she was well schooled in her native tongue and of bright mind. In her headaches she had been at times delirious, and once attempted to get out of a third-story window. Once she re-

mained apparently unsconcious for twenty-four hours. Her ambition and reckless enthusiasm in her work obscured all sense of fatigue and kept her in a constant state of stress. The menstrual function was regular, but it had been occasionally unduly prolonged and profuse. Pelvic organs had been pronounced otherwise normal by a competent physician who examined her a day or two before entering the sanitarium.

From first entering the training school she made statements about an expected inheritance from Germany, and expressed a fear that her father might seek to defraud her of it. She also represented that she feared her father might poison her. She absented herself from the school occasionally, stating that she was consulting her lawyer; who also, she claimed, was a suitor for her hand. She stated in a letter that she had an interview with her father in the park and he shot at her, narrowly missing her. In the light of subsequent events these statements had the appearance of systematized delusions or fabrications, but the allegations were not questioned or suspected at the time by her associates in the school, though it became evident later that she invented or really believed in a wholly imaginary situation in which her father, an honest, reputable man, was the villain, a fictitious attorney was the hero, the German ambassador at Washington was to be the *deus ex machina*, and Washington the scene of the drama. It is impossible to determine whether there was a pseudo-paranoia; another phase of disintegrated personality, or a pure invention such as is often met with in hysterical subjects; for later when the apparent normal self came into control all knowledge or recollection of these facts was vehemently denied.

Here may be mentioned an exceedingly strong attachment she formed for one of her associate nurses. She conducted herself toward this nurse with the extreme of devotion; wrote her many lovelorn letters, and showed jealousy of her at times. The attachment seems to have been innocent and romantic, an erotomania free from grosser manifestations. Her letters show its nature. Such expressions as the following abound: "It seems like months since I saw you last," "Life would be indeed misery without you;" "How slowly the time drags now that I can see you so rarely;"

October 1, 1903, "Think of me, for I am still yours"; November 26, 1903, "I think the sound of your voice would have done me lots of good"; November 30, 1903, "Think of your girl when you have time"; "It would be a heaven of comfort to go to —— and talk about you for she would not laugh or make fun of *the* love I have for you"; "Does absence make the heart grow fonder?" "Yes"; "Will I ever have you, if only for a week, no only for a day, all to myself? Write your girl so she will have something to live for; Nothing but your picture to help me; I cannot make your eyes smile or your lips speak." Also quotes,

"All have I given you, heart and thought and soul
And ask one recompense, — to be no bar
Across your path of life,"

showing an element of "masochism" which was evident in her conduct at times. In one letter she writes: "Today I have hated myself for the first time for loving you and have tried to break the spell. I have promised to go out with a young man. The struggle when he asked me was hard, and your face would come before my eyes, but I crushed it out for a second, and with my teeth shut tight I said, "Yes." Seems to me, with this I have lost all the *silly* childishness and grown into a worldly woman. My love for you will *always* be the same, but more silent, more sensible. God, what a strange, strange feeling is over me, and I am unable to shake it off."

I was informed by one who had known the patient all her life that there has never been any *affaire du coeur* with any man, but there was a previous very ardent and similar attachment to a girl she knew in Germany.

The nurse who was the object of attachment stated that her influence over the patient was such that she could speak to her in her sleep and elicit a reply. Patient had refused to give the names of her alleged lawyer and of another person whom she stated she saw in her father's company. Her friend remarked, "I will make you tell me when you are asleep." She later questioned the patient in sleep and the names and address were given promptly in answer.

The latter part of February, 1904, patient left school, saying she was going to Washington with her lawyer on

business connected with her inheritance and must see the German ambassador. She was told she would forfeit her place in the training school by leaving but insisted upon going. I note here that she seemed to have no recollection later of this loss of position in the school and asserted she had never given up her training course. She went to the house of a sister of her friend, attended the theater that evening, an event of which she also seemed to have no recollection afterward in normal state, nor could she afterward recall the name of the lady at whose house she was staying, nor of a little girl at the house of whom she had been at that time very fond. The following day she returned to this house from an absence down town, saying she had been sick on the street car. She looked very ill, was pale and nauseated and obliged to lie down. She stated she had taken a glass of water while absent and believed there was poison in it. She alternated all day between a dull and stuporous state and one of restless excitement. She vomited several times, complained of her head, evidently suffering much, and at times spoke of going to Washington, stating her lawyer was coming for her and she would take a train. The time passed and no one came, and she then insisted she would go alone but became more and more confused and irrational and finally passed into the secondary state of consciousness existing when she came under my care the following day and in which she remained for sixteen days. In this state she no longer answered to her own name but stated she was Miss X (a lady of her acquaintance who owned a farm some distance out of the city). She also stated she was on her way to her farm. At times she would say, "I will be ready in five minutes"; at other times she apparently thought she was on the road and driving a horse as she kept clucking as if to a horse. This she did at intervals for several days, and when asked what she was doing, would say, "I am on the way to my farm." She was largely indifferent to and unconscious of the outer world and at times mildly maniacal. She seized her clothing with her teeth and tore it somewhat, apparently writhing in pain. She also took a sleeve button and tried to swallow it. In this condition she came under my care on February 27, 1904.

Status praesens: — The impaired consciousness and mildly maniacal state do not admit of intelligent response to questions or systematic examination. The pulse and temperature are normal; the urinary secretion is normal. Examination of uterus and adnexa just previous to admission has shown no abnormality. Tactile sense seems unimpaired. There is no evidence of an hysterogenic zone; no motor abnormalities present or observed throughout except contortions of psychical origin; reflexes of knee and forearm both sides are heightened. Vision is impaired as shown by occasional misdirected movements in taking or touching articles, and failure to recognize snow on ground on looking out of window. Test of color vision results in patient calling dark green, black and light yellow, white: otherwise normal. The eye fundus found to be normal about one month after admission. There was a somnambulistic look and expression of eyes and face — an inward concentration of thought and dreamy obliviousness of the outward world. The pupils were quite dilated and responded to light and accommodation in nearly normal manner; Disorientation was complete and ideas of locality changeable.

When glass of milk was brought she said, "Stand it down and let the poison settle." After a while she drank the milk.[1]

February 28. Inquired constantly if the "flowers would bloom" today. When told it was winter and attention directed to snow outside did not seem to understand. Is in a state of childish gaiety. At times when flowers were given her she played with them like a child, laying them in rows across her bed. Has her "sweetheart's" photograph constantly on or under her pillow and kisses and talks to it; continues to "cluck" or say "get up" as if driving a horse.

February 29. Gesticulates in an infantile manner and talks in a rhythmical way as if reciting poetry. When the crewels for testing vision were placed before her said, "Oh, now we're going to knit a shawl."

[1] This idea of poison was apparently carried over from her delusion or invention that her father would poison her entertained in her previous state of consciousness.

March 2. Insists she is Miss X. and is on her way to her farm. Sometimes "going to the station in five minutes"; sometimes on the road, driving.

March 20. When called by her own proper name, speaks scornfully of herself, saying, "Oh, she is nothing but a nurse." Also mentions herself in a letter written this day as "that little girl upstairs," imagining her real self still at the school and her secondary self there also but in the character of Miss X., carrying over the memory both of herself and Miss X. from her former state. Attempts to get up and walk; very weak, staggers about room but shows no incoordination or motor abnormality. Wrote a letter dated more than a year back—"January 21, 1903.—"My dear G. Don't forget to pick some flowers for my room when I come home in five minutes and come to the station. Always yours, X." This letter was written in a completely inverted manner; that is to say from right to left and upside down and the hand-writing absolutely different from her natural writing. She wrote in such a way that the page was right side up to a person sitting *opposite* her, but wrong side up to herself. After writing the letter, she addressed the envelope in the same manner and drew a rude postage stamp in the proper corner in a childish, playful manner. When writing the patient appeared to guide her hand in an automatic manner, not following movements with her eyes, and seeming indifferent to good light or deep shadow on paper. I tested her in writing, reading and looking at pictures. When book or paper was handed her she repeatedly and invariably turned it wrongside up to look at it. She would read only the largest headlines in a newspaper and passed her her finger over the letters, slowly making them out as if by touch.

March 4. Says, "I am in my room at the school. When the train comes I am going to my farm. I have a pretty farm. Then I'll see G. and T." Question, "Who is G.?" Answer, "She's my sweetheart." Question, "Would you not prefer a gentleman sweetheart?" Answer, "No, men run away when they grow up." Question, "Are you going back to the school?" Answer, "No, they do not need me any more" (meaning that as Miss X. she was not

1 - 21 - 03

My dear: —

The train hasnt come yet. I can hardly wait to see you and Jonny. Dont forget to pick some Flowers for my room.

Yours with love

E. —— ——

Figure 2. Writing during state of dissociation. Written in March, 1904, dated 21st January, 1903. Written "wrong side up" and from right to left of patient: but from left to right of person *vis à vis*.

1-21-03

My dear:-

Miss said I
was in the Sanitarium, when I am
right here in the training school.
I went riding this morning in the
country and it looked like Mich.
Why dont you write or come to
see me when you come to the city
I want to see you and Tom ever
so much, please come and bring
him to the station. All the nurses
get me mixed up with that little
girl upstairs that your like, isnt
that funny.

Figure 4. Writing in state of dissociation. Same date as Figure 2. Written some days later.

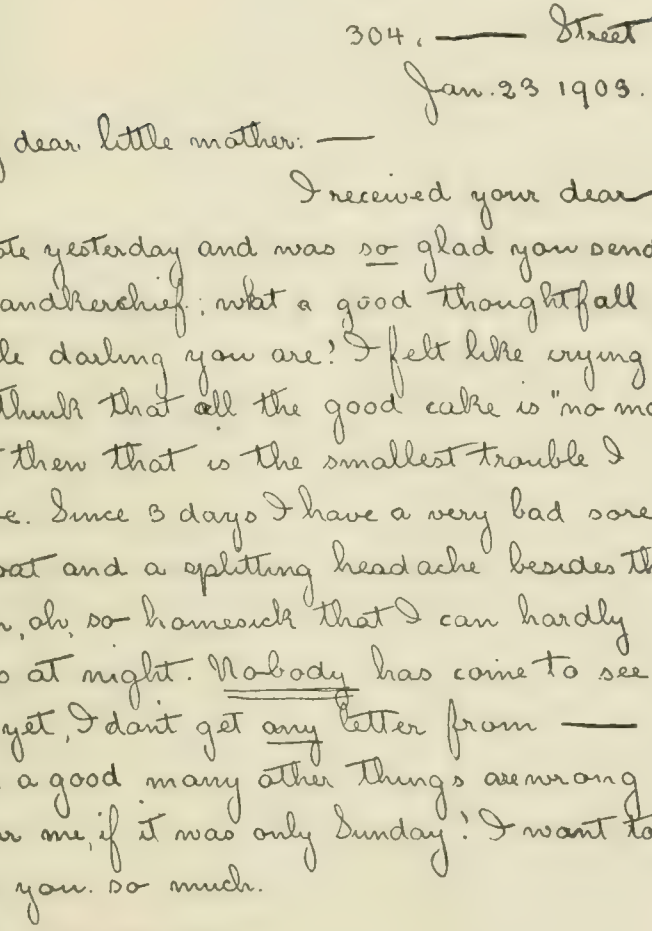
304, —— Street
Jan. 23 1903.
My dear little mother: —
I received your dear
l. note yesterday and was so glad you send
a handkerchief; what a good thoughtfull
little darling you are! I felt like crying
to think that all the good cake is "no more"
but then that is the smallest trouble I
have. Since 3 days I have a very bad sore
throat and a splitting headache besides that
I am, oh, so homesick that I can hardly
sleep at night. Nobody has come to see
me yet, I dont get any letter from ——
and a good many other things are wrong.
Dear me, if it was only Sunday! I want to
see you so much.

Figure 1. Normal writing of patient.

needed any more because later when properly conscious she claimed she had not left the school and wished to complete the course). Question, "What is your name?" Answer, "It is Miss X." Said to the doctor, "What have you on your foot?" and reached down to touch it but missed, not seeing correctly. Finally touched boot and said it was a ribbon; it was really an ordinary shoe-string.

March 5. Mental state seems analogous to that of child, playing and "pretending" various things (puerilism)

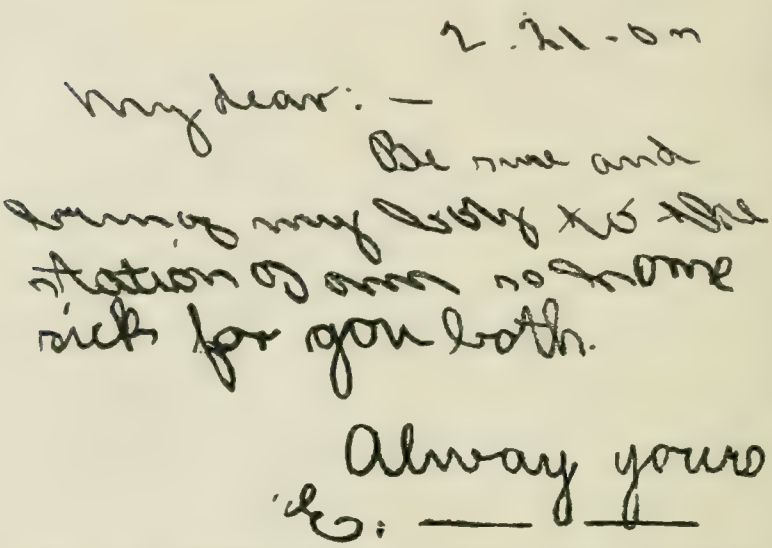

Figure 3. Fac simile of writing same as Figure 2, except date and showing mixed chirography.

but conscious of identity. Plays with flowers and ribbons as children do. Keeps photo of sweetheart on bed. Is just beginning to call the people around her by their proper names. Improving physically; chatters and talks to herself all the time whether alone or in presence of others. Talking to horses to "get up, we'll soon be there." Complains for a time of occipital pain, almost every day.

March 6. Said to nurse who was writing in usual way, "You write so funny; you have your paper upside down; why don't you turn it the other way?"

March 10. For a short time more clear in mind, noticing things around to which she had been oblivious and wrote a little naturally.

March 15. Today reads and writes right side up for first time.

March 20. Writes wrong side up again. Shows suspicion of poison. Clucking to imaginary horse.

March 22. Again clearer; writing naturally, depressed, crying, refuses food, not hearing from "sweetheart" largely the cause; fears she does not love her any more.

March 24. Wonders how she came to be in the sanitarium; now calls people by right names. Has slept poorly last two nights.

March 29. Has continued to write and read normally and to gain mentally and physically. Does not believe she ever wrote wrong side up and cannot do so now. Claims no recollection of anything until within six or seven days.

April 1. General improvement continues. Headache and despondency this morning: wanted to go to sleep and never wake; greatly troubled at not hearing from "sweetheart."

April 3. Migrainous headache; became more confused. Says every one is gone that she cared for. Two nurses she was very fond of are not now recognized when they speak to her; says it is some one else.

April 8. Writes two or three letters a week in natural style and totally different from Miss X.s" hand. Is alternately gay and lively and depressed with at times sudden transitions. When depressed complains of head.

April 16. Headache most of day. In afternoon very animated; after supper much depressed and irrational. Her headache was "nobody's business." When undressing told nurse to put hair pins where they would not hurt any one; also to put "her clothes away so nobody would get hurt" (*sic*).

April 19. Quite happy all day: visited city and came back with headache. In evening discovered a letter she had written a few days before and forgotten. Now on looking it over became excited, paced her room, muttering to herself, using the word "insane" repeatedly. Then she destroyed the letter;[1] was no longer herself: did not recognize any one except her own nurse. When a nurse was spoken of of whom she had been quite fond, said, "Who is she?" Did not remember her: had a delusion some one was going to take her away. Said if anyone came into her room she would kill him or her. Was allowed to stay alone in her room, nurse remaining on duty outside her door. In morning nurse found she had not removed her clothing; did not know anyone; ate no supper or breakfast; said she believed her friends had come during the night and had not been allowed to enter.

[1] See letter in collection, p. 2.

April 20 and April 21. Confused and irrational; acted and spoke as if having some suicidal intentions. Begged nurse to stay with her; said she could not trust herself: heard a horse pawing outside; said it was an indication she was going to die tonight.

April 22. Slept five hours menstruating; very little food; delirious all day; wants to end her life; complains of head; calls for dead mother.

April 25. Visited by stepmother: was natural and rational except that she claimed to have no recollection of given name she was always borne by which her mother called her; although she had repeated to nurse remarks of father in which he used this name for her without seeming to notice the inconsistency.

May 4. For one and a half hours talked of dead mother and of wanting to go in the woods alone for peace and rest; consciousness seemed clear. For two days past had apparently intense pain in stomach and had totally refused food. In night had hiccough for some time writhing with pain; tore up bedspread with teeth. (This was because nurse would not let her bite her arms and shoulders, which she had done, inflicting wounds.)

May 5. Natural until about seven P.M., then became silent and moody and passed into delirium; seemed to see and watch unreal objects with intent gaze. Would see things under couch or across room and whisper as if in reply to something heard, brow frequently contracting. Asked constantly for water. Long time in replying to questions; knew and gave names of nurse and doctor. Great effort to recall doctor's name, and when she gave it correctly, smiled and gesticulated in an infantile way. Would bite herself in arms. Last night scratched herself in bend of elbow with pin as if to open vein. When asked today about it, said someone did it. Evidently did not recollect doing it to herself.

May 7. Slept but two hours, headache and partial delirium in night.

May 8. Slept but three hours; delirious all day; better at bed time.

May 10. Stated she remembered writing date January

21, 1904 (her letters were all but one dated 1-21-'03) in training school and recalls some details of her work at that time. Does not remember leaving school. Denies ever speaking of fortune coming from Germany or of her father's designs against her: for him has none but respectful feelings. States her work in training school was very hard and that the lessons and exercises which she had to write in English were particularly hard, as she had not had English schooling and she was under constant strain. Denies writing letters about her alleged meetings with lawyer, her "father's plot" against her, etc. Today appears to be normal self and asks in greatest distress what I think is the matter with her.

May 11. Slept five hours, pleasant and rational in morning; headache with delirium in afternoon for a time.

May 23. Does not remember what she said or did last night. Had forgotten what she talked about doing today. Thought when she wakened about daylight that she had just come in from walk; did not remember going to bed last night.

May 30. Has continued to improve and been free from headache and delirium. It is now evident her whole countenance, movements, demeanor, as well as ideas during "Miss X" phase were entirely unlike her normal self and are entirely unknown to her.

May 31. Returned home.

July 13. Called at office with mother and met nurse, Miss——, her "sweetheart" there. Greeted Miss—— in a lover-like fashion, asked why they called her by the surname which did not belong to her; said no one had ever called her that name before, although it has been the name used for her all her life: still denies ever having told the story of her German inheritance, etc.

December 21. Father states patient has gradually improved in mental and physical state. In first and second month after return home had headaches and partial delirium for two or three days. Now realizes her secondary consciousness but knows of it only through others. It is a blank to her; still nervous and easily agitated; subject to headaches at menstrual epoch. Is quite herself and reliable and goes and comes as she chooses. No occupation except

housework. At holiday season in 1904 overworked on Christmas preparations and became seriously ill; her urine was suppressed and stomach very intolerant of food.

December 28. Writes to friend at sanitarium, "But do you know I fear I will never be my own self again. My strength comes back, oh, so slowly. I am still so nervous as to be almost unable to do any of my beloved needle-work. I cannot read much either and you can imagine how the time drags. 'Gee!' I wish I was there (at sanitarium) so you could give me a nice cold spray. I am getting massage every day. My spine and right side are painted with hydrofl. acid and my abdomen with iodine."

March, 1905. In latter part of March seen by her former "sweetheart," nurse Miss——,who says she is now free from headaches. Patient told Miss—— she could not remember her (Miss——'s) sister or her sister's little child of whom she had been very fond. Does not now know way round streets in vicinity of training school with which she was very familiar; does not remember the play they attended together a day or two before patient passed into condition of secondary personality. Does not remember anything of the institution at which she visited Miss—— several times.

March 31, 1905. Seen by former nurse, who states patient appeared childish or playful, peered at nurse and ran away and then returned. Gesticulated and talked rather excitably and with gaiety not quite natural. Friend with whom she was staying said she was up a good deal nights with patient.

March, 1907. Relative of patient states she is fairly well; is at home only part of the time. Unable to have any occupation except light home duties. It is said there has never been any further impairment of consciousness.

SPASM OF THE APPARATUS OF BINOCULAR FIXATION AND SUPERINDUCED BLEPHAROSPASM IN A HYSTERICAL PATIENT WITH A THEORY OF THEIR PATHOGENESIS

BY B. ONUF (ONUFROWICZ), M.D., NEW YORK

THE case reported below was seen at the Craig Colony for Epileptics. It concerns a woman of thirty-one years, unmarried, who was admitted to the colony for the treatment of seizures which were diagnosed as epileptic. None of these attacks were observed by the writer, nor was a description of the same obtained, so that their nature could not be definitely ascertained, although they were reported as *grand mal* convulsions by the attendants of the colony.

The following history was contained in the admission blanks of the case:

Family history.— Father died of hasty consumption at the age of fifty-four years; mother of dropsy when thirty-nine years old. A paternal uncle died also of hasty consumption. A sister of the father succumbed to cancer of the breast. Father's sisters were of a nervous temperament. No family history of epilepsy or alcoholism.

Personal History.— The patient had scarlet fever and measles in childhood. Her seizures were said to have begun at the age of fifteen years, after a fright, appearing first at the rate of one every three or four months; later, eight or nine per month, being more frequent at the menstrual period. They were considered to be *grand mal* convulsions, unpreceded by an aura.

Regarding the ocular disorder to be described here, the writer was consulted on December 8, 1903, by Dr. Goss, medical interne at the colony, and the following history concerning its onset was then obtained from the patient:

The malady came on gradually at the age of about seventeen years. She noticed that in order to see she had to hold her sewing, reading and writing very close to the eyes, and distant objects appeared very hazy. After wearing

"white" glasses prescribed by a physician, these disturbances disappeared; normal conditions being restored for the vision at a distance as well as for sewing, reading, etc. But after having worn the glasses about two months, she commenced to have trouble when walking in the sun. She would have to bend her head down and close her eyes. She was then prescribed smoked glasses and while using these had no inconvenience. She wore them constantly in the day, until a few weeks after her admission to the colony, which occurred on April 4, 1900. From that time she at first left the smoked glasses, off now and then, and finally altogether, and wore the "white" glasses previously mentioned. She remained free from symptoms until June, 1903, when she again began to have to close her eyes and bend her head down when in the sun. At that time the eyes began to jerk, apparently in a convergent manner, to judge from the description and accompanfying by the manual demonstration as given by the patient. The lids would be drawn together, especially of the right eye, which since that time was always the worser eye in every respect.

Since about a year, when walking fast, she complains of pain in the inguinal and left ovarian regions.

Status praesens. In describing the patient's condition I shall first point out the most salient features of the clinical picture and follow this up by other data.

The condition that first arrests our attention is that of the eyes and orbicularis oculi muscle on each side: patient presents periodic twitchings of the eyelids (blepharospasm), nystagmic inward twitchings, especially of the right eye, and marked convergence, particularly of right eye. Pupils contracted. On shading either eye, the pupil frequently remains contracted, at other times it dilates, more frequently, however, the former condition is observed.

Vision. Unable to read any of the letters of Snellen's types at thirteen feet. In reading small print, patient has to hold the page about two or three inches in front of the eyes, and even then encounters difficulty in distinguishing letters. *Ophthalmoscopic* examination shows fundus apparently normal, but great difficulty is encountered, probably on account of frequent change of refraction, so that no

sooner is the picture of the fundus clearly seen than it becomes blurred again. *After atropinizing* (atropia 1% gtt., 1 every five minutes, six doses in right eye), the pupil was found widely dilated. Test then showed $V\frac{10}{30}$ to $\frac{10}{20}$ in right eye. In left eye vision also became the same, although this eye has only received cocaine 4% gtt., 1 every five minutes, three doses. After atropinization she could read small print at a distance of nine inches. Ophthalmoscopic examination at this point shows: right eye requires — 4 for clear picture of fundus, left eye — 3. About ten minutes later the right eye requires — 3, and about an hour later — 2. Even at this time, accommodation was not entirely paralyzed. Thus we see that the impaired vision is probably due mostly to a spasm of accommodation.

Patient walks around in a groping manner as if she could not find her way. Says "she has to stare with the left eye, because she cannot see with her right eye" (right eye strongly converged).

December 11, 1903. *Visual field* of both eyes markedly contracted, especially that of right eye. The contraction is more marked when the test is made with both eyes open than with one eye closed. The convergent strabismus continues, in spite of atropinization of both eyes, but the spasm of the lids is less marked. *Hearing* not impaired.

Sensation. Patient shows almost complete analgesia of head, neck, chest and back down to a line, which, in front, is about the lower border of breasts and, behind, the lower border of ribs. Upper extremities also analgesic. Below the said line is an area, in which pain sense is preserved and which reaches downward in front over entire abdomen, and backward to region of buttocks. Below this area, *i.e.* over thighs, legs and feet again analgesia, with the exception of a small area on each side, inward and upward of the patella. Over all the analgetic districts tactile sense is well preserved, seems even better preserved than over non-analgetic area. However, temperature sensation is distinctly diminished over the analgetic parts. These disturbances of sensation are entirely symmetrical.

Reflexes. Knee jerks lively and equal, ankle jerks present, equal, no ankle clonus; triceps reflex and *cap. radii*

reflex present; plantar reflex of normal type, but giving rise to a clonus — like trepidation of the entire limb.

During examination patient also frequently exhibits a tremor of the entire body not due to coldness. No disturbance of gait.

At the direction of Dr. Gross and the writer, patient who heretofore was employed as a help in the laundry stopped work today

December 28. On December 19, at her own initiative the patient left off wearing glasses. On Decemper 21 she commenced work again in the laundry. Today she is presented again by Dr. Gross for examination. The spasmodic affection of the eyes appears now entirely gone. Pupils not contracted, react normally. Strabismus has disappeared. Vision as good as after atropinization. The anaesthesias previously stated are, however, still present in the same degree and extent. Inquiry elicits the following facts:

Patient states that on the 19th of December she all at once felt ashamed that she acted so badly, giving the doctors so much trouble and she decided that this must cease. She left off the glasses from that day. A day or so afterwards she was seen by Dr. Gross who found the spasmodic affection gone. It must be added that for several days after the examination of December 8, the patient's pupils were kept dilated by atropine, which, however, was then discontinued, no other treatment except the discontinuing of the work being applied.

January 1, 1904. Patient has kept free from ocular symptoms.

Ophthalmoscopic examination, January 8, 1904 On both eyes still an apparent myopia, of about one diopter on the right eye and of about two on the left. Is this an actual myopia? or still a slight spasm of accommodation?

February 10. A letter was received from the patient under this date, in which she complains of being worse again. Dr. Tremaine, who has charge of her, reports that the condition is the same as it had been on December 8.

In view of the fact that the observed contraction of the visual fields may partly be due to the extreme convergence

which would necessarily cut out a considerable portion of the nasal side of the field, I requested Dr. Arthur G. Bennett of Buffalo to kindly determine the field exactly by Perimeter and at the same time to determine the acuity of vision and eventual errors of refraction. I subjoin Dr. Bennett's report here, taking occasion to express my gratitude for the active interest he took in the matter:

"In reference to your patient, I have gone over her carefully and believe you are right in your conclusions. In spite of the atropine she is still active with the accommodation. Her vision varies from $\frac{3}{5}$ to $\frac{5}{5}$. As I make her refraction, it is as follows: Right eye: — 0.25 — 0.50 Cy. Ax. 90; left eye: — 0.50, Cy., Ax. 90., These lenses give her $\frac{5}{5}$ vision in each eye and are about the same as the shadow test shows. The muscles are normal when quiet. No hyperpheria present, but, of course, a high degree of convergent squint when she attempts to look sharply. The fundi are healthy. The *fields* are markedly contracted, the left more than the right.[1] I did not take the different colors. There was difficulty enough of getting the white.

I enclose charts. I fancy these would vary from day to day."

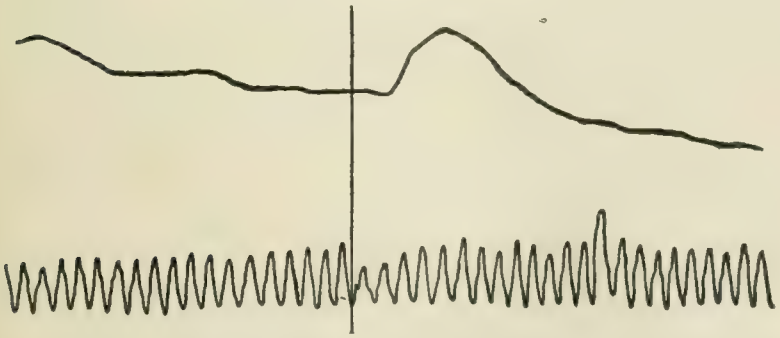

Figure 1. Stimulus a falling weight. The resistance was very high at the beginning of the experiment and fell throughout the quiet period and up to the moment of stimulation shown by the vertical line. The latent time and the lessening in the rate and amplitude of the respirations is well shown.

[1] This is interesting from the fact that it is the right eye that shows the greater muscular disturbance.

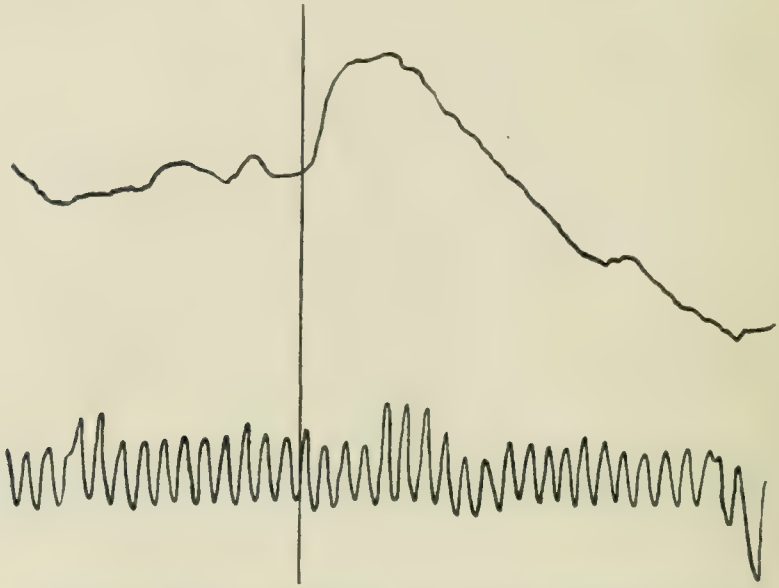

Figure 2. Spontaneous speaking. The vertical line indicates the momen of speaking. The irregularities before speaking are well shown in the galvanometric curve. In the respiratory curve the decrease in amplitude during the rise of the galvanometric curve is well shown.

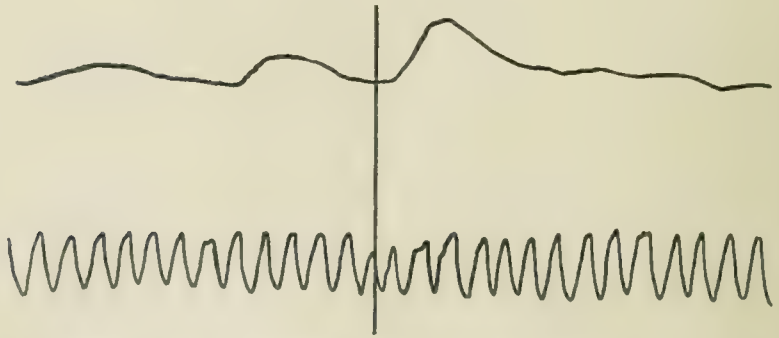

Figure 3. Stimulus a whistle. Snowing a small expectation curve before the moment of stimulus. The latent period and the changes in the respiratory rate and amplitude are well shown.

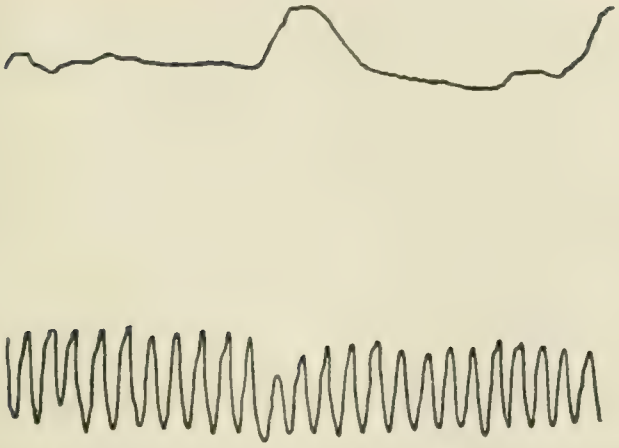

Figure 4. Expectation curve. Showing the changes in the electrical resistance and respiration due to expectant attention.

VISUAL FIELDS TAKEN BY DR. BENNETT

May 21, 1904

Interpretation of the Case

The above history shows clearly enough the presence of the following features: We have before us a patient with well marked stigmata of hysteria, namely, a strong, fairly concentric, although rather irregular contraction of the visual fields, an analgesia and diminution of the temperature sense of the entire body, with the exception of a zone of normal sensation extending in front from the breasts downward over the entire abdomen and posteriorily from the lower border of the ribs to the buttocks, and of a small area of normal sensation inward and upward of the patella on each side. The patient furthermore suffers from seizures, which were considered as epileptic, but the nature of which, as no description is extant, remains conjecturable.

This patient when seen by the writer presents blepharospasm, a spastic convergent squint, a contraction of the pupils and a spasm of accommodation. The latter three conditions are varying, but there is no difficulty in establishing the fact that they go hand in hand, being in mutual dependence on each other, and that they represent exaggeration of the physiological functions which are enacted in the process of binocular fixation. It is known that the

act of fixation implies convergence of the eyeballs, contraction of the pupil and accommodation of the lens.

The patient, however, in addition to the muscular ocular manifestations just mentioned, presents that of blepharospasm, which complicates the clinical picture considerably; and the question arises, whether the blepharospasm is causally connected with the spasm of the physiological apparatus of fixation and, if so, in what manner, or whether it is altogether independent of it. In this respect the history is of quite a little help and throws considerable light on the evolution of the entire muscular ocular disorder.

We must remember that, as Dr. Bennett's painstaking examination has disclosed, the patient has myopic astigmatism of 0.50 Ax 90° on each eye in addition to a myopia of 0.25 of the right eye. This in a hysterical patient formed a sufficient basis for the evolution of the disorder from which she is suffering. The error of refraction led to increased efforts of accommodation and fixation, by holding objects nearer and nearer in order to see better. It will be remembered that at the age of seventeen, when writing or reading, the patient had to hold the objects very close to her eyes. That indeed at that time a spasm of accommodation was already developing is evidenced by the haziness of vision for distant objects. It indicates that accommodation had become so habitual with her that even when looking at distant objects, clear vision of which required relaxation of the apparatus of accommodation, the latter still continued in action, attended by its faithful concomitants, *i.e.* convergence of the eyeballs and contraction of the pupils; the convergence continuing even when patient looked straight forward with one eye.

The establishment of such habits, making a definite physiological group to a great extent independent of will and consciousness by which it is originally guided, has been pointed out by Janet as one of the salient features of hysteria and leads us to comprehend the patient's muscular eye disorder which we may define as a spasm of the physiological apparatus of fixation.

In following the history up, we notice that the blepharospasm developed later than the spasm of the apparatus of fixation. After having begun to wear "white glasses," prescribed by a physician, she noticed indeed a vast improve-

ment of vision, reestablishment of normal conditions for nearer as well as for distant objects. But after having worn the glasses for about two months she began to have disturbances when walking in the sun. She would have to bend her head down and close her eyes.

This evidently laid the basis for her condition of blepharospasm and seems to offer a very plausible explanation on a physiological foundation. The patient by her spasm of the apparatus of fixation developed a "habitual small pupil," as one might say; consequently the retina was used or "gauged" to a small amount of light. We know, on the other hand, how a retina held in obscurity becomes sensitive to light. It is sufficient to remind one of the blinding sensation experienced when entering into the daylight after having spent a considerable time in a dark room, a sensation compelling us at once to partly close the eyes, in order to diminish the amount of light entering the eye. The clepharospasm here occurring is a perfectly physiological reflex.

In the case of our patient, through the habitual spasm of the pupil, the retina was gauged for darkness and, as it had been so for many months, the sensibility to light should be considered to be correspondingly higher. Therefore when the patient's spasm of the apparatus of fixation by the use of glasses correcting her error of refraction began to subside and the pupil accordingly to dilate, it was quite a natural consequence that the retina, receiving now a much greater aggregate of light than before, showed signs of irritation. These made themselves manifest by the blepharospasm, which, in itself a physiological reaction, showed a pathological exaggeration in view of the condition the eye had been in before, for such a long period, and in view of the fact that we have to deal with a hysterical patient.

In accepting this explanation, there is also no difficulty of understanding why the patient feels more comfortable when wearing smoked glasses, and why the spasm of the apparatus of fixation at once increases as soon as these are left off. The removal of the glasses increases the influx of light, and the patient then at once automatically uses the means which effectively diminish the amount of light going to the retina; that is, she puts her eye into the condition of extreme fixation and accommodation, which physiologically

causes a contraction of the pupil and thus reduction of the entering amount of light.

As soon as the smoked glasses are put on, the need to reduce the amount of incoming light by contraction of the pupil disappears, and the patient then at once relaxes the apparatus of fixation and accommodation.

In looking through the literature for cases of the same character, I have been able to find only one presenting the same combination of symptoms. This is the case of Landesberg, published in the *Journal of Nervous and Mental Diseases* (1886, Vol. XIII, page 85), who presented blepharospasm, spasm of accommodation and tonic spasm of the internal rectus muscle.

The cases reported by Landesberg and myself have in common their occurrence in patients with well marked stigmata of hysteria, and the combination of symptoms. They differ, on the other hand, in the mode of onset, the sequence of the symptoms and the apparently monocular distribution of the disorder in one case (Landesberg's) versus its binocular character in the other. Landesberg's case concerned a boy of thirteen years in whom failure of vision due to spasm of accommodation of the left eye developed within twenty-four hours after an attack of intense blepharospasm. It was succeeded within the next twenty-four hours by an extreme spasm of the internal rectus muscle. The right eye, in which vision was greatly reduced owing to a central leucoma, apparently did not participate in the muscular disorder. Landesberg says nothing of the possible connection between the spasm of accommodation and that of the internal rectus muscle; but very likely the two went hand in hand, just as in my case. It is equally probable that the pupil, about which nothing is mentioned, presented a state of contraction corresponding to the spasm of accommodation.

It is interesting to add here that in Landesberg's case the spasm of accommodation relaxed entirely, and apparently permanently, under ether narcosis, while that of the internal rectus muscle relaxed only temporarily, *i.e.*, for a period of seven hours.

Of further interest is the fact Wilbrand and Sänger,[1] basing their views on observations made on hemi-

[1] Wilbrand and Sanger, De Neurolgie des Augus.

anoptic patients, conclude that the blinking reflex between optic nerve and facial, must pass through the optic perception center in the cortex of the calcarine fissure. If this is so, it would explain the ease with which the reflex may be influenced by the psychic. That in our case psychic factors played no minor rôle, was shown by the fact that her condition improved so markedly under the influence of the interest shown her and the resulting effort to "do all she could to help us since we took such trouble with her." It is true, however, that to these psychic influences was added the important factor of atropinization, which relieves the spasm of the pupil and the ciliary muscle, thus discouraging the influences which tended to hold up the spasmodic state of the apparatus of fixation.

The case may be classed among, or is at least closely allied to report. Morton Prince[1] in a very interesting manner has described and analyzed as "Association Neuroses" and characterized as follows: "When the various neural processes have been well almagated, no matter what the extent, they seeem to be carried on in the lower centres as an automatic mechanism form of Neuroses." Donley[2] following up Prince's idea has reported a case belonging to that class.

Owing to other work, I was unable to follow the case up properly. It seems to me, however, that the rational treatment would be to establish normal habits again by gradual adaptation. This would probably be best accomplished by keeping the eye well atropinized so as to relax accommodation and to counteract the increased influx of light thus caused, by wearing dark glasses. Gradually the latter should be replaced by successively less dark ones and, arrived at a certain stage, the atropine should be diminished in dose and kept on diminishing while at the same time keeping on the process of successive substitution of less and less dark glasses until colorless glasses could be used. In a case of such long duration undoubtedly the process would have to be a slow one and would have to be closely followed in order to have any prospect of a permanent recovery.

[1] Morton Prince: Journal of Nervous and Mental Diseases, May, 1891.

[2] J. E. Donley: Boston Medical and Surgical Journal, Nov. 3, 1904.

CLINICAL DEPARTMENT

CASES ILLUSTRATING THE EDUCATIONAL TREATMENT OF THE PSYCHO-NEUROSES

BY MORTON PRINCE, M.D., AND ISADOR CORIAT, M.D.

(From The Clinic for Nervous Diseases, Boston City Hospital)

THE following cases are reported as showing the effects of psycho-therapy in different forms of psycho-neuroses. This method of treatment has of late awakened renewed attention and has been taken up by clinicians of world-wide standing. Among the recent contributions may be mentioned those of Dubois (The Psychic Treatment of Nervous Disorders) Oppenheim, Dejerine, Levy, Barker, J. J. Putnam, Waterman, Taylor, Linenthal and others who have advocated the rational employment of the influence which the mind has in altering for good functionally disordered conditions of the nervous system. Necessarily the efficacy of such treatment is based upon the empirically recognized fact that many such conditions are brought about by a faulty mental make-up and attitude, habits of thoughts and other mental processes, whether in the form of dissociations, perverted syntheses, emotions or what not. The work of the future must be to determine the true relation between the functional disorders — physiological and psychological — and the fundamental mental fault, and thus find the rational basis for psycho-therapeutic procedures. This is particularly important in order that the limitations of this therapeutic measure may be understood, and those who employ it may keep well within rational lines and understand the principles on which the technique is based. In fact, some of the new exponents, Dubois for example, tends to take a much too one-sided view of the matter and assume a far too sweeping influence of the mind upon the body and overlook the reverse process (which has been recognized by the common experiences of mankind) the influence of a disordered body — the stomach of a dyspeptic for example — on the mind.

In our experience, too, we have often been surprised to find how clinicians who have not looked into the matter of psycho-therapeutics as a scientific procedure, under the influences of a wave of medical or popular interest in this remedy, have sought foolishly to have conditions of organic deterioration affecting mind or body relieved by psycho-therapy.

As the matter now stands, there is no acknowledged agreement among the advocates of the method as to the therapeutic principles and therefore technique. It is noteworthy, however, that more recent writers lay more stress on the educational and, as they are pleased to designate the technique, the "persuasive" method, and scout with righteous rationalism the "suggestive" procedure. Fundamentally at bottom all methods are educational and suggestive. One of us (Prince) as long ago as 1898, in opposition to the purely physical methods then in vogue, advocated the educational treatment[1] of psycho-neuroses combined with physiological hygiene.

The general therapeutic procedures laid down were —

"First. Instruction of the patient in the nature of the symptoms and disease.

"Second. Fixed ideas, apprehension and erroneous beliefs counteracted; faulty habits of temperament and character corrected.

"Third. Individual symptoms suppressed by electricity, suggestion and other therapeutic agents.

"Fourth. Rules given for the daily conduct.

"Fifth. Improvement of nutrition, moderate rest, and, in extreme cases, isolation from previous surroundings only."

The therapeutic principles underlying these procedures have since come independently to be recognized by clinicians as leading to the most rational and effective methods.

We hear, however, nowadays, owing to a lack of sufficient insight into the psychological processes involved, much about "persuasion" as a substitute for suggestion. The advocates of persuasion do not realize that persuasion

[1] The Educational Treatment of Neurasthenia and Certain Hysterical States. Boston Med. and Surg. Journal, Oct. 6, 1898.

and suggestion are one and the same; whether we call it suggestion or persuasion, what we do is to create and substitute new healthy mental syntheses and processes with invigorating emotional tone for the previous faulty syntheses and dissociations. The only justification for alleging a difference is that in old time suggestion, practiced by early therapeutists, the effort was to allay individual symptoms or primary abnormal conditions by rather blindly directed implantation of ideas of normality. The technique was rather empirical than rational. On the other hand, in so-called "persuasion," the effort is to create broader and therefore more rational and effective syntheses. Persuasion is therefore more educational in its technique, but it still remains suggestive. Nevertheless, in individual cases, particularly in that class of cases that attend hospital clinics, where the intellectual capacity is limited and incapable of grasping points of view for which a high order of culture is a requisite condition, a blind suggestion calling only on faith is most effective and all that is required. Such a suggestion is often more effective when given by means of some physical agent, like a magnet or electricity. Whether or not persuasion or suggestion shall be given in hypnosis is merely a matter of detail of technique not of principle. As a rule hypnosis is not necessary. It is beyond the scope of this report, however, to discuss this aspect of the question.

It goes without saying that in the milder forms of psychoses the ordinary hygienic methods of treatment as commonly employed are sufficient, especially when there is decided physical debility and even when the whole disability can be made out to be a pure psychosis. It is in the severe cases which do not yield to ordinary physical methods that psycho-therapeutic treatment is called for.

In the following cases the technique was adapted to the case, that method being used which seemed best to meet the individual requirements: —

Case 1. Psycho-epileptic attacks of the motor type, resembling Jacksonian epilepsy. Recovery.

The patient, C. K., female, single, seventeen years of age, had suffered for two years from peculiar "staring spells," which would come on suddenly and were unasso-

ciated with any definite aura. There was no vertigo or loss of consciousness in the attacks. Every morning she had been subject to attacks of the following description: On being awakened and after fully awake for a minute or two she would suddenly have an attack consisting of an indistinct blubbering followed immediately by a tonic spasm of the left arm which would become a blind and ill-directed reaching attitude as if grasping for something. The eyes would be wide open and staring, and there was complete loss of consciousness. The attack would cease abruptly when the patient was sharply spoken to or when she was roughly shaken. There was complete amnesia for the attack and a retrograde amnesia for the short period of awakening. For eight months these attacks have occurred every morning with clock-like precision, always on awakening and always in an identical manner. There was no biting of the tongue, no foaming at the mouth, relaxation of sphincters or post-convulsive exhaustion. While in the clinic the patient had an attack and she was placed for the first time in a state of experimental distraction by listening to a monotonous stimulus, in an attempt to reach the dissociated motor mechanisms of the convulsions. This attack was an exact corroboration of the above account given by her mother. The treatment consisted of a simple waking suggestion given by means of a fictitious magnet (a tuning-fork), the patient being assured that it would cure her. The attacks ceased immediately after the first treatment and have not since recurred — a period of nearly five months.

Case 2. Psycho-epilepsy in a boy of nine. Recovery.

Two months previous to being seen the patient saw a man fall off a team. At this time he became greatly frightened and since has been unusually nervous. About ten days before being brought to the clinic, he began to have daily attacks of the following character: Without any associated fear or visual hallucinations, he would suddenly complain of severe vertigo, would stagger and sway as if intoxicated, would cry and scream loudly, become violent and show convulsive movements of the hands and feet. Occasionally he would try to knock his head, and once

attempted to jump downstairs. There was no amnesia for the attacks, no relaxation of the sphincters, and no subsequent stupor. Physical examination was practically negative. Light hypnosis was obtained after a few trials, and in this state he was given suggestions that he would have no future attacks, with the result that although he had a few light attacks during the first week of treatment, none have occurred since — a period of over a year.

Case 3. Psycho-epileptic attacks simulating Jacksonian epilepsy. Recovery by hypnotic and waking suggestion.

The method employed in the following case was that of suggestion in hypnosis. The advantage of the method lay in the fact that in this condition, as often happens, her memory broadened and she was able to recall the various circumstances connected with the origin of the psychosis and therefore to give the right clew to its pathology and enable rational suggestions to be selected and given.

Before hypnosis, there had been amnesia for certain important factors in the case. It was one of psycho-epilepsy of a hysterical nature.

The patient, Fanny S., had for six months suffered from epileptiform attacks simulating Jacksonian epilepsy. The attacks occurred daily, sometimes several taking place during a day. During the course of the first examination an attack occurred apparently, so far as one could see, without ostensible cause, although it was due, as it afterwards appeared, to an unsuspected emotional factor. It is not necessary to describe here the attack in detail, suffice it to say that the spasms which were preceded by an aura involved the abdominal muscles, the diaphragm and the muscles of the larynx and neck. It was found possible to bring on the attacks at will by striking the patient. It appeared on inquiry that the attacks developed during and followed a condition of delirium into which she was thrown by a fright. She had amnesia for the delirious state excepting that she remembered the convulsion which occurred. In hypnosis she recalled distinctly all the details of her delirium and remembered that she thought, and those about her remarked, that her convulsion foretold that she had the

same disease that her mother had; namely, epilepsy. This fear of epilepsy had persisted ever since and was the cause of the first attack which she had had in the clinic when the fear arose in her mind that she would be told that she had epilepsy.

Treatment: During the first hypnosis, which was deep, the patient was told that she did not have epilepsy; that there was nothing the matter with her excepting unfounded fear of a disease which she did not have; that she now knew this, realized it and believed it. This view was elaborated at some length for its educational effect. The patient accepted the suggestion and manifested delight at the knowledge. After being awakened there was found to be no amnesia for the hypnotic state, and the same thing was repeated to her. These suggested ideas were again accepted with gratification. The attacks immediately ceased and afterwards could no longer be induced by a blow or any other method. She remained well for a number of weeks during which time she was under observation.

Case 4. *Night palsy of three years' duration. Recovery.*

The patient, B. B., female, married, thirty-two years of age, had always been well with the exception of a somnambulistic episode when she was thirteen years old. Three years ago the patient experienced a sudden emotional shock in the death of her child, who suddenly expired in her arms under distressing circumstances. Three months after this episode, the following phenomena began to present themselves, slight at first, but gradually increasing in intensity and frequency, until they became of absolute daily occurrence. At first they were mere sinking sensations with momentary inability to move the limbs, but soon they became complete nocturnal paralysis. Every morning on awakening from sleep she found herself completely paralyzed from head to foot. She could not open her eyes and could speak only a word or two with effort. Besides the paralysis she felt a choking sensation and a sense of suffocation with palpitation of the heart. She was fully conscious during the attacks, and there was no concomitant amnesia or haziness of memory, but there usually followed a feeling of exhaustion

which continued throughout the morning. There was no particular sense of fear, and the dreams were of an indifferent character. The paralysis persisted until she could get some one to pull down her arms which usually were in a fixed attitude above her head. When this was done the paralysis immediately disappeared. Her general health was good. An interesting point which may have some significance was elicited; namely, when paralyzed the hands were usually clasped and the arms extended above the head in a position similar to that which was assumed by her child at the time of its sudden death, when she received the shock, and the worst attacks always occurred on Monday, the day of the week on which her child died.

The treatment used was the same as that used in Case 1; namely, suggestion through a fictitious magnet. During the first month of treatment, only seven light attacks of palsy occurred and the patient was able to come out of each one voluntarily. After this, the attacks ceased entirely and have not since (three months) recurred.

Case 5. *Nocturnal enuresis. Recovery by hypnotic suggestion.*

The patient, R. K., about sixteen years of age, had been suffering from nocturnal enuresis since early childhood. With this exception, he is a perfectly healthy and well developed youth. For years, every therapeutic procedure, including drugs and raising the foot of the bed, had been tried but without result, with the exception of a temporary improvement under treatment by a "Mind Curist." Mental fatigue always aggravated the trouble. The patient was directed for educational purposes of control to empty the bladder every two hours during the day and always just before retiring and to take no liquids after six P.M. Small doses of atropin were administered, though this had previously been tried, and in addition it was determined to try the effect of suggestion in hypnosis. At first only a light hypnotic state was secured, but he soon went into a deep somnambulism with complete amnesia. The suggestions directed against the enuresis were first given for definite periods, beginning for one night and gradually increasing to eight nights, then they were made for indefinite periods,

with the added suggestion that his habit was a thing of the past and no longer existed for him. While in hypnosis, the patient was always made to repeat these suggestions after they were given, and also to repeat the suggestions given him at each previous seance, but for which he was amnesic in his waking state. The results were most gratifying. Within a period of six months he has been troubled only five times with enuresis — once very slightly — and during the past three months there has been only one recurrence during an attack of scarlet fever in which diuretics were largely used.

Case 6. Boulimia of several years' duration. Recovery

F. R. K., male, age fifty-three, has always been of a nervous temperament. Three or four years ago he began to suffer from severe pain and burning in the stomach day and night, and he began to think that unless he took some food the gastric juice would digest his stomach. The pain is always relieved in a few minutes by eating or drinking milk, and consequently he keeps a quart of milk by his bedside which he sips and consumes during the night, claiming that the pain wakes him up constantly. Food taken at meals also relieves the pain. During the day time he is constantly drinking milk, he never dares to go to any place where he cannot obtain it, and at short intervals runs into the various places where it is sold. He also takes bicarbonate of soda for the burning sensation. One physician told the patient he had hyperchlorhydria; another, that a tumor mass was developing in his abdomen and caused the localized pain, which on examination we found to be an intense hyperaesthesia of the skin. Lately, he began to fear a malignant growth, because frequently while eating he felt that the food "had stuck half-way down," whereupon he used to begin to cough and attempt to vomit. After retching he usually raised mucus, in which he once or twice noticed a few streaks of blood, evidently due to retching. He has never vomited solid food. Physically, he was pale and anaemic, felt exhausted, and there was an extremely hyperaesthetic area in the right hypochondriac region, but the tenderness was entirely superficial. No tumor mass was felt, the patient mistaking a belly of the rectus muscle for one.

The treatment consisted of a thorough explanation of the condition, hydrotherapy, organic iron for the anaemia, the gradual withdrawal of the milk taking and the substitution of small quantities of olive oil for the gastric hyperaesthesia, faradism over the hyperaesthetic area in the abdomen and constant suggestions that his trouble was purely functional and not organic and that he would entirely recover. As a result, all the symptoms completely disappeared within a month.

Case 7. Tic of eructation of sixteen years' duration. Recovery.

In the following case the purely educational treatment was employed: Mrs. Y., 45 years of age, consulted one of us on October 25, 1904, for what was believed to be a gastric trouble. The symptom complex from a neuropathic point of view was a very interesting one and will be reported in full later. Under this theory she had been treated exhaustively by other physicians, the treatment including washing out of the stomach, etc. No benefit having resulted, however, apparently it was suspected that the disease was some form of neurosis. When we analysed the symptoms, it became plainly evident that the trouble was an unusual form of tic. The main symptom of which she complained was eructation of gas which came on in the form of violent attacks. These interfered very much with her social life, preventing her from going about freely, often from making engagements or compelling their cancellation when made. Observation of an attack, however, showed that it consisted of more than this. It began with clonic compressive movements of the lips, during which the larynx rose and the muscles attacked were thrown into clonic spasms. There were movements of the throat as in the act of swallowing. The abdomen rose spasmodically as if from spasm of the diaphragm and at the height of the attack the cheeks were blown out and in. After these spasms had lasted from fifteen to twenty seconds, there was a violent explosion of air with a grunting sound as if there were closure of the glottis, and the abdominal muscles became rigid. The whole of this constituted what previously had been called eructation of gas.

Without going into further details, it may be said that the attacks usually came on two or three hours after eating and were supposed to be due to dyspeptic disturbances. They had first appeared sixteen years previously after an emotional shock and existed ever since. Examination of sensation during an attack revealed the fact that there was hypo-esthesia over the face during the time while the spasms lasted. A prick of a pin was no longer sharp over this area, and there was a slight blunting of touch. Sensation became normal after the attack.

Treatment: The whole attack was analyzed and its true character shown to the patient. Her mind was disabused of the idea that it was in any sense of a gastric nature and its neuropathic basis and the relation to her mental make-up, etc., explained at length. No further treatment was given, but she was left, after this explanation, to see if she could not control the attacks herself.

Shortly after this, according to her later report, the attacks completely ceased, and have not returned since — a period of over two years.

Case 8. Phobopsychosis of twenty years' duration. Recovery.

In the following case the method followed was that of educational suggestions given in light hypnosis. By "light hypnosis" is meant a condition that practically amounts to deep abstraction which is not followed by any amnesia. The patient, Mrs. X., about forty years of age, suffered from a phobopsychosis very intense in character. For twenty years she had never gone out of the house alone excepting in a carriage because of her psychosis, which was a fear of fainting. During the attacks she would be overwhelmed with an intense fear of losing consciousness and falling, the faint possibly ending in death. The fear was accompanied by various somatic symptoms, such as palpitation, vasor motor disturbances, dizziness, etc. Besides the attacks proper she was rarely free from a fear of the attacks, so that she had both attacks and fear of attacks.

A searching examination on several occasions failed to elicit any satisfactory information as to their origin or any memory of any episode which might have induced them.

In a state of abstraction her memory broadened and then she recalled the first attack and the connecting links of ideas. It appeared that in her youth she received several emotional shocks one upon another at about the same time. In the first of these, she felt herself losing consciousness and looking up saw her face reflected in the mirror in which she saw a white object which she dimly recognized as her own face. The thought occurred to her — Is this death? Then followed one or two other shocks, and ever since she has been obsessed with this phobia.

Treatment was protracted over a period of about six months. It consisted of educational suggestions in states of abstraction, or light hypnosis. The nature of her psychosis was thoroughly explained and insisted upon; false ideas were eradicated; new systems of ideas involving a thorough knowledge of her psychosis and of her mental strength and intellectual capacity were forcibly instilled. Ideas were particularly selected for suggestion that were accompanied by a strong emotional tone of exaltation. As a result the phobia gradually ceased and she became practically well and able to go about like a normal person. From time to time during the past two years when she has become overfatigued, there has been a slight tendency to a recurrence, but these relapses have been easily overcome by occasional suggestions.

She has frequently described her previous and present conditions in terms which allow no doubt as to her recovery.

Case 9. Pyrophobia, with associated acts of precaution. Recovery.

In the following case the method of treatment was in every way identical to that employed in the last case, Mrs. X. Miss C., about thirty-five years of age, had suffered for a number of years from a phobo psychosis, the fear being that of fire. To this, various secondary fears had attached themselves such as fear of gas escaping from the gas fixtures. When a candle or match was lighted in her room, she had to be assured by a prolonged hunt that no spark had fallen into her clothes, her bureau, carpet, or any possible location. Every night before going to bed innumerable possible locations for sparks had to be looked into by

her family, to make sure that no possible smouldering fire was concealed anywhere. From the match used to light the gas the fear of fire was transferred to the gas itself and the question had to be settled that the gas was firmly turned off. If she passd by an open fire the possible flight of a spark to her dress had to be considered. The process of going to bed every night occupied an hour or more in vain hunts for sparks, etc. Of course there was a neuropathic soil which it is unnecessary to go into here.

Treatment consisted of educational suggestions in abstraction, and a cure resulted in the course of a number of months.

ABSTRACTS

CONTRIBUTIONS TO THE STUDY OF MOTOR APRAXIA BASED ON A CASE OF UNILATERAL APRAXIA. *By Dr. K. Abraham in Centralblatt für Nervenheilkunde und Psychiatrie, March 1 and 15.*

Although our knowledge of Apraxia and its varieties has grown considerably since the report of Liepman's well-known case, it is quite evident from the report of Dr. Abraham's case that the subject has as yet not been exhausted. The phenomena manifested by these patients, when carefully studied, are found to be far too complex to enable us to make any given new case fit into the existing classification of apraxia.

Dr. Abraham reports a large number of observations on a case which he has studied for over two years. Although at first sight a case of pure motor apraxia, a closer analysis showed that beside the motor aspect there were many psychic components which had to be considered. Indeed one is inclined to question if in all reported cases of motor apraxia there are not greater or less psychic disturbances.

The case is briefly as follows: A man 61 years of age has apoplectic attacks at frequent intervals which leave him with a right hemiparesis, a sensory aphasia and a right hemianopsia. These conditions, however, are transitory. In a short time after the attack the right side regains its muscular power and the aphasia clears up. With the exception of brief periods following the shocks the patient's mind remains clear, his attentive powers are good and there are no defects of memory. It was found however that the patient could not carry out with his right hand purposeful movements. The motor reactions of the right hand did not correspond to what was intended. In combing his hair with the right hand, for instance, the patient would use the back of the comb instead of the teeth. He was to shine his shoes with a brush placed in front of him: whereupon he properly introduces his left hand into the shoe but instead of taking the brush he shines the shoe with his right hand. With his left hand he can execute orders in a perfectly normal way. When, however, he attempts to use both hands the action always miscarries.

That the apraxia is not a sensory one is evident from the

fact that the patient's perceptive processes are good. He can see and, now that the immediate effect of the shock has passed, can correctly name objects given to him, and he understands perfectly their use. Nor can it be considered as an ideational apraxia. The faulty reactions are not due to a failure of memory; while the action is progressing his mind is perfectly clear as to what he intends to do. Moreover an ideational apraxia would be bilateral while this is unilateral. Yet the case can not be regarded as a pure motor apraxia. A careful analysis of acts carried out by the right hand, or by both hands under the guidance of the right, reveals psychic disturbances which are not present when the left hand alone is acting. To take a few instances:

When given a coat to put on the patient properly introduces left arm into left sleeve. Due to an accidental movement the coat falls to the floor. The patient picks the coat up, holds it upside down and tries to introduce right arm into the sleeve which he cannot find. Finally with the left hand he maks a fold in the coat, puts his hand through it and is satisfied. The fault in this curious act was neither motor nor ideational. He clearly had in his mind what he was to do and after he constructed an opening by making a fold in the cloth all the movements were properly executed.

The author in the analysis of this act sees evidence in it of a psychic disturbance which manifests itself when the activity is carried on by the right extremities. But it is hard to understand what part the left arm played in this maladjustment. It is with his left hand that the patient grasped two parts of the coat and held them, making a fold into which he inserted his right arm. The left hand thus deliberately aided in the maladjustment. What were the mental states accompanying the action of the left hand? Did the patient realize fully what he was doing? Can we say that the patient clearly had in mind what he was to do, namely, insert his right arm into *the sleeve?* It would seem as if there must have been an ideational disturbance present. While having in mind, in a general way, what he was to do he missed the main point, that his arm was to be inserted *into the sleeve* and not into a fold made by the left hand. Considered as an ideational apraxia the part the left hand played in this act becomes more intelligible. The psychic disturbance then would be general and not limited to the activity of the right

hand. We would simply say that the ultimate end of the act was not clear to the patient's mind.

Again: After many fruitless attempts to introduce his right leg properly into a pair of trousers he finally succeeded in getting them on but the back of the trousers was in front. When the patient's attention was called to it, he turned around thinking that he thus corrected his mistake; this last act can not, of course, be regarded as a part of the motor apraxia. But here again one is at a loss to understand how we can possibly regard, as the author does, this last act as a psychic disturbance correlated with the activity of the right extremity as the putting on of the trousers had been completed. Let us take up the situation at this point. The patient has a pair of trousers on with the back of the trousers to the front. His attention is called to it and he turns around thinking that the situation has thereby been changed. The fact that the original maladjustment was due to the apraxia of the right leg would seem to have nothing to do with this marked psychic disturbance. The attention of the patient is called to the fact that his trousers are on wrong, he perceives it and appreciates the fact, and resorts to an expedient to remedy the condition which shows decided mental weakness.

Many other instances are analyzed by the author, all tending to show that where the right extremities are in question there are psychic disturbances as if these members were cut off from the normal psychic control.

One is left, however, with the impression that there is much left to be cleared up in the analysis of the mental states in cases of apraxia. Cases reported as pure motor apraxia all show general psychic disturbances. Even in Liepman's case we have in common with most cases the lack of insight of the patient to his maladjustments. In a pure motor trouble we would expect the patient afterwards to realize that the desired result had not been attained. Such is the condition we find in disturbances of a purely motor type, as for instance in ataxic states where the maladjustment is due to incoordination. In cases of apraxia, however, the patient has no insight into his condition, the miscarried action fully satisfies him. This evident psychic disturbance can hardly be regarded as a part of the apraxia for it is no longer a disturbance of motion but one of perception. The patient fails to perceive that the end attained is not what he intended.

As an explanation of the psychic disturbances, which manifest themselves only in the activity of the right extremities, the author introduces the conception of Monakow, that of "diaschisis," that is, that a local cerebral lesion will, in addition to the local disturbance, produce other disturbances as a result of the break in the interrelations of the parts of the brain. A local lesion will thus produce a motor apraxia but through diaschisis there will be a disturbance in the correlated psychic activity, which manifests itself when the affected parts are acting. Thus, for instance, the inability to insert his right leg into a pair of trousers is due to the local lesion producing the apraxia, while the psychic disturbance manifested after the patient finally gets the trousers on the wrong way is the result of a break in the interrelations in the brain producing a dissociation of the psychic states accompanying the activity of the right leg.

At the autopsy the anatomical findings were a high degree of arterio sclerosis with resulting cerebral atrophy which was more manifest on the left side. The most marked changes were in the first left temporal convolution to which is ascribed the sensory aphasia; in the Rolandic area, giving rise to the paralysis; in the occipital lobe accounting for the hemianopsia; and most marked of all in the superior parietal lobe, where a lesion, according to Liepman, produces apraxia.

H. Linenthal

THE PSYCHOLOGY OF MENTALLY DEFICIENT CHILDREN. *By Naomi Norsworthy, Ph.D., Archives of Psychology. Edited by R. S. Woodworth, No. 1, November, 1906. New York, The Science Press.*

This monograph which forms one of the Columbia University contributions to philosophy and psychology is characterized throughout by careful research, and forms accordingly, a most valuable because scientific addition to our knowledge of mentally deficient children. There has been within recent years, a vast deal written and spoken concerning the mentally deficient; but when one looks closely and seeks for the facts upon which such writing or talking is founded, one discovers many times that either the facts are not forthcoming or they are scarcely able to bear the inferences placed upon them. In the present contri-

bution the author presents us with a wealth of facts from which his conclusions seem logically to follow.

We shall select only some of the more interesting data which Dr. Norsworthy has collected. Mental deficiency has existed and has been recognized as such from the earliest times. Among the Orientals, the Brazilians, the North American Indians and in many parts of Ireland and Brittany, the feeble-minded were considered to be under the special protection of deity, and consequently were treated with all respect and consideration. The Greeks, on the contrary, took the opposite view; the mentally weak as well as the physically weak were left to die from exposure.

The first medical publications worthy of note are from the pen of Itard, a French physician who published in 1801 his pamphlet, "De l'Education d'un Homme Sauvage," in which he discusses the theory of the treatment and education of the idiot. Following Itard came Belhomme, Ferrus, Faret and Voisin. It is, however, to Edward Sequin that the honor belongs of having created a real method, the "méthode medico-pedagogique," for the treatment and education of idiots. In 1866 Seguin published his book, "Idiocy and its Treatment by the Physiological Method," and the method therein outlined by him is still generally followed in the education of the feeble-minded.

In the study before us the author has sought to determine (1) whether the mental defects of idiots are equalled by the bodily defects, (2) whether or not idiots form a special and separate species, (3) whether the entire mental growth is retarded, that is whether there is a lack of mental capacity all around.

The decision of the best thinkers as to the first question is clearly shown by the definitions of idiocy given in the standard text-books. Physical defects are so closely associated with mental deficiency in the minds of some writers, that we find such defects mentioned as signs of idiocy. In opposition to this view Norsworthy finds that in an examination of the height, weight, pulse and temperature of a large number of idiots (157), their mental deficiency as compared with ordinary children is in no way equalled by their bodily deficiency.

The facts seem to justify the conclusion that whatever idiots may be on the mental side, as far as concerns physical conditions of growth, nutriment, etc., they are not far from ordinary children. The evidences of constitutional weakness, of slow growth and of

inferior size which by many are held to be characteristic of mental deficiency, do not appear. These children were certainly not as has been sometimes stated, two inches shorter and nine pounds lighter than normal children in general.

As to the second question the weight of opinion is on the affirmative side and the majority of writers seem to take it for granted and to consider the contrary opinion not worth discussion. This point of view is represented by Dr. J. B. Tuke, who writes as follows: "As the scale of imbeciles ascends it is found that the condition is evidenced not so much by low obtuseness as by irregularity of intellectual developments. This seems to make the difference between the extreme stupidity of the lowest of the healthy and the highest form of the morbidly depraved type. The two conditions do not merge gradually into each other." In contradistinction to this, Dr. Norsworthy concludes from his experiments that idiots seem not to form a special class or species, at least as far as intellectual traits are concerned, but that they are included as part of a large distribution. And furthermore this distribution is a continuous one, there being no sudden break in ability, above which we find ordinary children and below which we find the idiot, but that the decrease in ability is gradual. There is a steady progression from the ordinary child, through those special cases of mentally deficient children still retained in school, to those idiots found in institutions who can do most of the ordinary school work and seem to be not very different from children in general, or to those who can do simply manual labor and so down through all the gradations of complete idiocy.

The third question is most commonly answered by saying that the idiot is an individual in whom mental capacity in all directions is lacking. According to Defendorf,— "This form of defective mental development is characterized by a moderate degree of mental incapacity, which is, however, of equal prominence on all sides of the mental life; it may, however, involve chiefly the moral field, when it is sometimes called moral imbecility. Idiocy is characterized by a more profound degree of mental incapacity than imbecility." Here again Norsworthy is found in opposition. There is not among idiots an equal lack of mental capacity in all directions. In the weight test they are 18% above the median for ordinary children, in memory 10% and in the intelligence tests 9%. To speak of idiots then as being

equally deficient in all the mental powers is inaccurate. "Arrested mental development" must be taken to mean unequal arrests, some powers receiving a very much greater check than others. The feeble-minded child may be weak on all sides of his mental make-up (though this is not true of all of them) but that is not telling the whole story. From the viewpoint of the psychologist and the educator it is fully as important to know that the idiot's perceptive powers are almost two and a half times as strong as his intellectual powers and almost half as strong again as his powers of memory, as to know that he is weaker than the ordinary child in all these particulars.

Much has been written of the poor muscular control possessed by the idiot, but it may very well be that he stumbles about in walking and drops things so frequently, simply because he does not know just where he is to go, or just what he is to do, because he is in a condition of chronic indecision or of obstructed will. In other words the real motor or perceptive power need not be nearly so bad as it seems to be, for the difficulty, after all, may be intellectual.

J. E. Donley

WAS THE REGICIDE LUCHENI INSANE? A CRITICAL STUDY. *By A. Papadaki* *L'Encephale, June*, 1907. *pp.* 594-607.

This article is a critical study of a recent paper by Ladame and Régis (Archives of Criminal Anthropology, April, 1907) upon the mental status of the regicide Lucheni, the assassin of the Empress of Austria. The judges refused to listen to the plea of irresponsibility, on the ground that Lucheni himself protested against this hypothsies. Landame and Régis believed Lucheni to be a constitutional degenerate. Papadaki takes exception to this view and attempts to prove that Lucheni was a paranoiac of the political type analogous to Guiteau, the assassin of President Garfield. During Lucheni's adolescent period, at the age of seventeen, he was of unstable character, incapable of profitable or sustained labor, in fact, he led a tramp's existence and was a veritable vagabond. For some time he possessed the feeling that he must assassinate an important personage, the Duke of Orleans for instance. When asked why he killed the Empress, he replied "Poverty. . . . The day of my birth my

mother disowned me" His general discontent did not consist of a revolt against society nor in any anarchistic conceptions, but was the natural outcome of his mental disease. He stood alone, was uninfluenced by others, was not a member of any anarchistic or political society and planned the assassination without help from others. He was a real paranoiac, e "dalire politique," egotistical, exalted, boastful, without insight and a prey to his blind, unreasonable convictions. He gloried in having slain an important personage, a "heart Blanc," "one of those who for nineteen centuries have oppressed the masses." This is the attitude of all paranoiac regicides. He resembled many of the cases of querulous paranoia (Querulanten wahnsinn). Like all political paranoiacs, he possessed the exalted delusion that his mission consisted in removing all undesirable persons from society and this delusion appeared to have had a long period of incubation and introspection before it reached its culminating point in the assasination. There was also a tendency towards mysticism. Like all paranoiacs his deductions were false and illogical and for years he thought that he was unjustly treated by his fellowmen. Several examples of this latter are given by the author. To su up, he is neither semi-insane nor semi-responsible, but is suffering from a constitutional defect out of which there slowly evolved this paranoia of the "political type" with its systematized delusions. Hallucinations appear to have been absent during the entire course of the diseases.

I. H. Coriat

PSYCHO-EPILEPSY. *By Sir William R. Gowers. Review of Neurology and Psychiatry, July*, 1907.

In a short paper Gowers briefly describes several cases of psycho-epilepsy. The symptoms consist principally of periodic attacks of intense fear or of intense depression, usually beginning and ending suddenly, but of more or less protracted duration. In one case there was intense depression, in another a vague dread and in still another there was a dreamy state of consciousness without any sense of unreality (relation to Hughlings-Jackson's uncinate group of fits). The author with his usual analytical skill asks the pertinent question — whether this mental inertia represents a condition of the brain which, compressed into a moment, would have involved loss of consciousness?

I. H. Coriat

REVIEWS

SOCIAL AND ETHICAL INTERPRETATIONS IN MENTAL DEVELOPMENT. *By J. M. Baldwin, New York. The Macmillan Co., 1897. Fourth edition, 1906. $2.60 net.*

This edition differs from the third merely in having a few more literary references and notes. The book, as the author states, assumed substantially its final form in the third edition.

The principal change that appears in this last edition compared with the first is, aside from the omission of Appendices A, B, and C, the addition of some forty-three pages of new matter. Section 2 of the Introduction and Appendix K are added for the purpose of meeting the criticisms of the reviewers.

In Appendix K the criticisms of Professor Tufts, Professor Dewey, and Dr. Bosanquet are discussed. Even if the author has not been altogether successful in meeting these criticisms, he has at least succeeded in making his own position clearer.

The additions that appear in the body of the text develop more fully points that criticism had shown to be incomplete. Of these additions the most important are section 4 of chapter I. on the 'Genesis of the Self-Thought' section 4 of chapter XI. on 'The Socionomic Forces,' section 4 of chapter XII. on 'Animal Companies,' and chapter XIII. on 'Imitation.'

The discussion of Imitation in chapter XIII. is by far the most important of these additions, for here the author sets forth what he means by this term. In summing up the discussion of this chapter he points out that imitation is the method of social organization in two senses. First, ideas are propagated by imitation; and second, there must be "imitative assimilation and growth, whereby what is imitated is also organized in the individual's own thought, and imitatively ejected into others, becoming part of a situation — a status-scheme — whose organization includes 'publicity' and 'duties and rights.'"

C. S. BERRY

MENTAL DEVELOPMENT IN THE CHILD AND THE RACE, METHODS AND PROCESSES. *By James Mark Baldwin. Third edition. Revised. New York. The Macmillan Co.*

This latest edition of Professor Baldwin's book differs but slightly from the first and second editions. The book is too

familiar to psychologists everywhere to require an exposition of its subject matter in this Journal.

The few points in which revision has been effected may be briefly noted: —

The author has endeavored to make it more apparent than heretofore that the volume is one of a series of genetic studies of the mind, the others being, "Social and Ethical Interpretations in Mental Development," "Development and Evolution" and "Thought and Things," the last being the first of two volumes on "Genetic Logic."

The chapters have been arranged in groups according to the nature of the matter presented and contain, first, A presentation of the Methodology; second, The Experimental Foundation; third, Biological Development; and fourth, The Development of Conscious Processes.

An appendix is added containing two brief notes on the subjects, Profiting by Experience and Imitation, and on Fluctuations of Attention. An attempt is made to bring the facts into line with the author's well-known theories of imitation and of dynamogenesis.

KARL T. WAUGH

CORRESPONDENCE*

Next to the question of the spread of tuberculosis there is none which is of greater importance in medicine and sociology than that of the etiology of insanity. Religion as one of the causes assigned by the statistician is, I think, generally discredited at the present, except as admitting that in the highly emotional forms it may act as an exciting cause for some neuroses, very acute and more nearly allied to hysteria than to true insanity of a chronic character.

But if we admit as having at least equal and probably much greater influence on the formation of morbid associations and fixed ideas, the present psychic doctrines of healing and pseudo-religious cults, can this class of emotions and ideas be kept so far in the background? Will not the differences between the teachings of the different sects be brought out most sharply by a

*The writer of the above is a prominent neurologist whose name is withheld by his request lest the persons referred to in the letter may be identified.— EDITOR.

knowledge of what may be coincidences, but which also look very much like logical results? Such are some which have come within the observation of the writer within a short time or have been noted in the public prints.

A young man, the son of a Christian Science mother, himself a "reader" had betrothed to another, was a well marked case of dementia praecox. In the hospital he alleviated the sufferings of his fellows by reading to them from the Bible of the sect. His friends wisely, but very inconsistently as it seems to me, took away his books apparently with excellent results.

A woman for many years a zealous Christian Science "reader" developed the idea that she had been reduced by hypnotism to absolute moral or spiritual nothingness, had been mentally destroyed beyond hope or possibility of redemption. She had been under the care of a Christian Science nurse who read to her from the Bible of the sect. Although able to control herself perfectly for a purpose, she never admitted a moment's relief of her misery, walking the floor for hours denouncing the authoress of her woe. It was impossible to ascertain at this time whether she had repudiated her former doctrines or simply despaired of their efficacy in her own case. She was successful in her suicide, evidently planned for a long time.

At about this time occurred the suicide of a prominent Christian Science "reader" the sister of a man even more eminent who also escaped her nurse.

Then also appeared in the papers the report of a "mind reader and healer" who had so firmly impressed her followers with her doctrines that they would not believe in her death, although she had left directions for her cremation.

And at last comes the announcement which to disbelievers seems a strange thing to come from such source, that the foundress herself has for years suffered from the terrors of a belief (which her "next friends" call a "delusion" but which is shared by many of her disciples as part of the doctrine) in the possibility of a hostile and destructive influence by evil-minded persons even on the minds of true believers, a malignant animal magnetism.

Who shall protect the protectors? Who shall teach the teachers?

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DECEMBER, 1907–JANUARY, 1908

FURTHER INVESTIGATIONS ON THE GALVANIC PHENOMENON AND RESPIRATION IN NORMAL AND INSANE INDIVIDUALS

(From the Psychiatrical Clinic of the University of Zurich)

BY CHARLES RICKSHER, M.D.
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THE changes produced in the electrical resistance of the human body by various causes have been studied for many years but as yet no definite results have been reached. Ch. Féré was the first to report on the changes produced by emotions. In a communication made to the Société de Biologie in 1888 he noted that there was a lessening in the bodily resistance when various sensory stimuli were employed, and also that emotions caused the same decrease. R. Vigouroux had been working on the problem of electrical resistance in the human body with patients from the Salpétrière and had reached the conclusion that the old view that the resistance was due to the epidermis was wrong and that the condition of the superficial circulation was the real cause. He thought that variations in resistance were caused by an increased or decreased superficial circulation. Féré accepted these conclusions and added that "l'étude de la résistance électrique peut trouver une application dans les recherches des psycho-physiologues."

Nothing new was reported for several years. A. Vigouroux in 1890 published a report on the study of elec-

trical resistance in melancholics but added nothing; Tarchanoff, Stricher, Sommer and Veraguth have all published the work of the French investigators. The first real psychological researches with the galvanometer were made by Veraguth who worked with Jung's association experiments and this instrument in 1906. In 1906 work was begun in the Psychiatrical Clinic in Zurich to determine if possible the cause of the electrical resistance of the body and the various changes produced in it in normal and insane individuals by various stimuli. The apparatus used consisted of a circuit containing a single element of low E. M. F., a Deprez-d'Arsonval galvanometer of high sensibility, a shunt for lowering the oscillations of the mirror and two brass plates upon which the test-person places his hands and completes the circuit. The galvanometer reflects a beam of light to a celluloid scale to which is attached a movable slide with a visière, which, pushed by hand, follows the moving mirror-reflection. To the slide is attached a cord leading to a so-called ergograph writer which marks the movements of the slide by means of a pen-point on a kymograph-drum which is fitted with endless paper. For marking time a Jaguet chronograph was used and for the moment of stimulus an ordinary electrical marker.

The problem of the cause of the resistance was first attacked and the results given are those obtained by Jung and Binswanger and as yet are unpublished. The resistance was found to vary greatly in different individuals with different conditions of the palmar epithelium. That the epidermis was the seat of resistance was proven by the fact that when the electrodes were placed under the skin the resistance was enormously decreased. This was done by piercing the skin of each arm with a surgical needle and using the needles as electrodes.[1]

The French investigators were unanimous in ascribing the changes in resistance to changes in the blood supply of a part caused by dilatation and contraction of the vessels, the greater the blood supply the lower the resistance and *vice versa*. That the blood supply was not a chief factor

[1] Experiments by Veraguth and Jung and Binswanger.

was proven by exsanguinating the part in contact with the plates with an Esmarch bandage when it was found that the galvanic phenomenon still existed.

That the changes in resistance are not due to changes in contact, such as pressure on the electrodes is shown by the fact that when the hands are immersed in water which acts as a connection to the electrodes the changes in resistance still occur. Pressure and involuntary movements give an entirely different deflection than that which we are accustomed to obtain as the result of an affective stimulus.

The time which elapsed between a stimulus and the change in resistance as shown by the galvanometer suggested some change in the sympathetic nervous system or in some part controlled by it. The sweat-glands seemed to have more influence than any other part in the reduction of the resistance. If the sweat-glands were stimulated there would be thousands of liquid connections between the electrodes and tissues and the resistance would be much lowered. Experiments were made by placing the electrodes on different parts of the body and it was found that the reduction in resistance was most marked in those places where the sweat-glands were the most numerous. It is well known that sensory stimuli and emotions influence the various organs and glands, heart, lungs, sweat-glands, etc. Heat and cold also influence the phenomenon, heat causing a reduction and cold an increase in the resistance. In view of these facts the action of the sweat-glands seems to be the most plausible explanation of the changes in resistance.

The following experiments were made in the winter and spring of 1907, with a view of determining the effect on the galvanic phenomenon and respiration of a series of simple physical and mental stimuli in a number of normal and insane test-persons. The galvanometric changes were noted by the apparatus described above. The respirations were recorded by means of a Marey pneumograph attached to the thorax and leading by means of a rubber tube to a Marey tambour to which is attached a pen-point which writes on the kymograph drum.

The results of pneumographic experiments of various

authors are very conflicting. Delabarre[1] found that attention to sensory impressions increased the frequency and depth of the respirations. Mosso in his work on the circulation in the brain could come to no satisfactory conclusions. Mentz found that every noticeable acoustic stimulus caused a slowing of the respiration and pulse. Zoneff and Meumann found that high grades of attention cause a very great or total inhibition of respiration, while relatively weaker attention causes generally an increase in the rate and a decrease in the amplitude of the respirations. Total stoppage of respiration was found in sensory attention relatively more frequently than in intellectual. Martius notes great individual differences and comes to the conclusion that there is an affect type which differs from the normal rest and is shown by a slowness of the pulse and respiration.

The experiments of the above authors were all made on a limited number of test persons, usually students. Our experiments with the pneumograph were made usually on uneducated men, attendants in the Asylum, and our stimuli were quite different from those used by the other investigators. It is possible that the great difference in our results may depend in part on these facts.

In our experiments care was taken to have the conditions as nearly equal as possible. It was found that different positions of the body, leaning forwards or backwards, for example, caused a change in the level of the respiratory curves. Slight movements of the body and of the limbs did not influence the curves. The tambour itself can cause changes in the recorded curves. The tambour must contain the same amount of air in every case or the curves will be dissimilar. The curve registered is not an exact one owing to the faults of the instruments. In deep inspirations the rubber covering is rendered tense and when the pressure in the chest changes the elasticity of the rubber causes the respirations to be registered in a different way than they really occur.

It must also be borne in mind that the respiratory curves recorded cannot be regarded as ordinary normal

[1] Remarks of Delabarre, Mosso and Mentz are quoted from Zoneff and Meumann.

respirations but only as an experimental normal. No one can breathe naturally with a recording apparatus on his chest and with his attention more or less directed to it. The release from the tension of the experiment is well seen at the end of the experiment where the respirations become deeper and the level of the curve is changed. The pneumograph could not be used with the women on account of the clothing nor could it be used with many of the insane test persons because of their excitability.

The plethysmograph was not used because the sources of error with it are too numerous. Martius has shown that even when the arm and instrument are encased in plaster of Paris involuntary movements occur which render correct interpretations of the results difficult.

In the galvanic curves many sources of error must be avoided. Chief among these is the deflection caused by a movement of the hands. An increase or decrease in the pressure of the hands upon the electrodes causes an instantaneous change in the position of the reflection of the galvanic mirror. This change is sudden and one can hardly voluntarily produce a change in the position of the reflection which resembles that caused by an affective mental process. The ordinary change of position of the hands is shown by an almost vertical rise or fall of the galvanic curve as shown on the kymograph drum. To avoid as far as possible involuntary changes of position, bags of sand were placed on the hands, thus preventing any but voluntary movements. It was found that quite extensive movements of the body could be made without influencing the galvanometric curve. Deep inspirations, sighs, cause more or less of a rise in the curve. In the same curve a sigh occurring after an affective process seems to cause a more extensive rise than one occurring before. Voluntary long inspirations cause little or no disturbance. It must therefore be assumed that sighs are caused by some affective complex, or that they cause such a complex to come into consciousness, or that they cause an unconscious feeling state.

The test persons consist of physicians, attendants and patients suffering from various mental diseases.

The experiment may be divided into six parts, each part consisting of a separate stimulus or series of stimuli of the same kind, physical or psychical. Before each stimulus or series of stimuli the test-person was told in a general way what was to occur. In many individuals after a short period of waiting for a stimulus there were changes in the respiration and in the galvanic curve due to expectation. These expectation-curves will be discussed later.

The measurements of height are in each case the real, *i.e.*, the vertical height. The respiratory rate is given as so many per centimeter which is a purely comparative measurement. In the quiet periods the average rate per centimeter for ten centimeters at the beginning and end of each period are given.

Part I of the experiment consists of a quiet period of four minutes. The test-person was requested to sit as quietly as possible and was told that no stimulus was to be given. In Part II the stimulus was a leaden weight allowed to fall about three feet onto the floor. In Part III the test-person was requested to speak spontaneously, after a minute or so, a word or short sentence and then remain quiet. Part IV consists of three physical stimuli, a low whistle, a weight dropped onto the floor and a picture, picture post-card, shown to the test-person. Part V consists of four sentences spoken by the investigator. The first two were usually some familiar proverb as, "The pitcher goes to the well until it is broken"; the third and fourth were more critical and referred directly to the test-person or to his habits. In several cases single words, such as "eye" and "face," were given. Part VI is again a quiet period of four minutes. The results of each part will be given and the normal test-persons, fifteen in number, will be first considered.

NORMAL TEST-PERSONS

Part I. The galvanometric curve is usually higher at the beginning than a short time afterwards, due to the feeling of expectation and tension caused by the unaccustomed position and the strange experiment. As a rule the curve shows many irregularities caused by the movements of the

hands and body which the test-person makes in adapting himself to a comfortable position, to expectation, to muscular tension, which factor, however, is not great, and to various feeling complexes. In the course of the quiet period oscillations of the galvanic mirror are seen which cannot be accounted for by any movement of the hands or body, by any respiratory change or by any conscious thought or association. We have, therefore, attributed them to the indefinite *feeling* caused by some complex which remains in the subconscious. Every one has experienced these vague feelings, sad or gay, which come without apparent cause, remain but a short time and are soon forgotten. Such a curve was well shown in the case of a well-educated physician with a good power of self-analysis who could not remember any affective thought which had occurred to him during the period.

The inspirations at the beginning of the quiet period are as a rule deeper and more frequent than at the end. At the beginning they average 2.91 per cm. and at the end 2.79 per cm. The average height of the inspirations at the beginning is 12.41 mm., at the end 12.26 mm. The respiratory curve does not show any great or constant change of level in our cases.

In Part II (stimulus a falling weight) the galvanometric curves show great individual differences. In one case, an attendant who was very nervous and frightened at the experiment, the galvanometric deflection was 54 mm. In another case, also an attendant, but of a very phlegmatic disposition, the deflection was only 4.6 mm. The average deflection for fifteen test-persons was 20.6 mm.

The latent time, *i.e.*, the time from the moment of stimulus to the beginning of the rise of the galvanic curve varies from 1.5 to 5.5 seconds. This time while showing individual variations is usually shorter in the cases which show the greatest galvanic reactions and averages 2.87 sec. The time required for the curve to reach its maximum height corresponds roughly to the height, a curve of 54 mm. requiring 11.5 sec. and one of 10 mm. requiring 2.5 sec. The average time is 6.93 seconds.

The inspirations show individual differences in rate and amplitude and the respiratory rate does not vary as the height of the galvanometric curve, as the following table will show.

Height of galv.	Inspir. before stim.	Rise of galv. curve	Fall of galv. curve
54 mm.	3.5 per cm.	3.86 per cm.	3.92 per cm.
18.8 mm.	3. per cm.	2.72 per cm.	2.5 per cm.
4.6 mm.	3. per cm.	2.5 per cm.	2.3 per cm.

Thus the change in rate for a galvanic curve of 54 mm. is not so great as in the case of a curve of 4.6 mm. Whether the respiration is slowed or quickened during the rise of the galvanic curve seems to depend on the individual. The majority, however, show a slowing during the rise and a quickening during the fall of the galvanic curve.

The average number of inspirations before the stimulus is 3.05 per cm., during the rise of the galvanic curve 3.02 cm., and during the fall 3.09 per cm.

The amplitude of the inspirations does not vary directly with the rate. Before the stimulus the average height of the inspirations is 11.75 mm., during the rise of the galvanic curve 10.73 mm., and during the fall of the curve 11.45 mm.

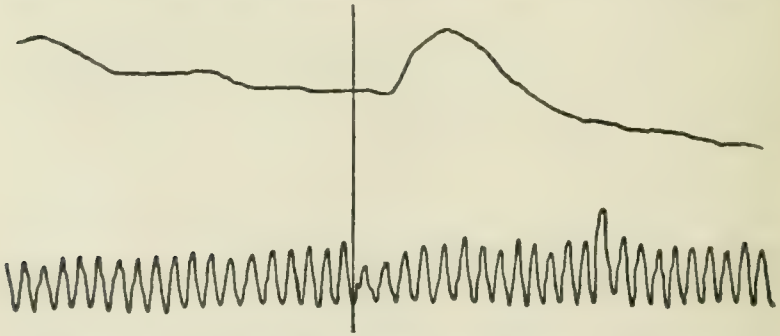

FIG. 1.— Stimulus a falling weight. The resistance was very high at the beginning of the experiment and fell throughout the quiet period and up to the moment of stimulation as shown by the vertical line. The latent time and the lessening in the rate and amplitude of the respirations is well shown.

Part III (spontaneous speaking). In this part the average height of the galvanic curve is less than in the preceding, being 17.9 mm. As a rule the curves of the different test-

persons show little variations in height. Some of the curves show irregularities before the moment of speaking, caused partly by indecision and partly by the preparation for speaking. In the normal test-persons the galvanic curve begins to rise with the moment of speaking or even a little before the moment of speaking.

The number of inspirations per centimeter is decreased during the rise of the galvanic curve and continues to decrease as the curve falls. The average rate before speaking is 3.5 per cm., during the rise of the galvanic curve 3.15 per cm., and during the fall 3.04 per cm. The average height of the inspirations before speaking is 10.08 mm., during the rise of the curve 10.57 mm., and during the fall 11.75 mm. Thus the height increases as the rate decreases.

In Part IV the stimuli are three in number: a falling

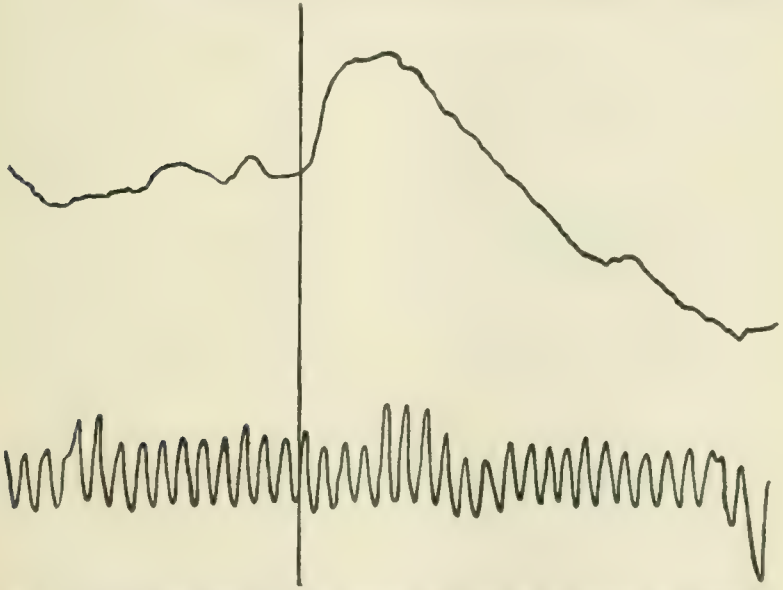

FIG. 2.— Spontaneous speaking. The vertical line indicates the moment of speaking. The irregularities before speaking are well shown in the galvanometric curve. In the respiratory curve the decrease in amplitude during the rise of the galvanometric curve is well shown.

weight, a whistle and a picture. In each case the stimulus is not merely a sensory, visual or auditory one, but has also a psychical component. Practically every stimulus when

perceived or received into consciousness is associated with affective complexes. A low whistle is heard not only as a sound but also as a call and is associated with many past experiences; a picture calls up many other associations. Naturally the personal equation comes into play here to a very great extent.

The results are:

	Weight	Whistle	Picture
Height galv. curve	17.94 mm.	18.2 mm.	19.72 mm.
Latent time	2.55 sec.	2.82 sec.	3.03 sec.
Time to reach max.	6.95 sec.	9.88 sec.	7.47 sec.

In these cases the latent time increases as the height of the galvanometric curve. The time for the curve to reach its maximum varies in the different cases.

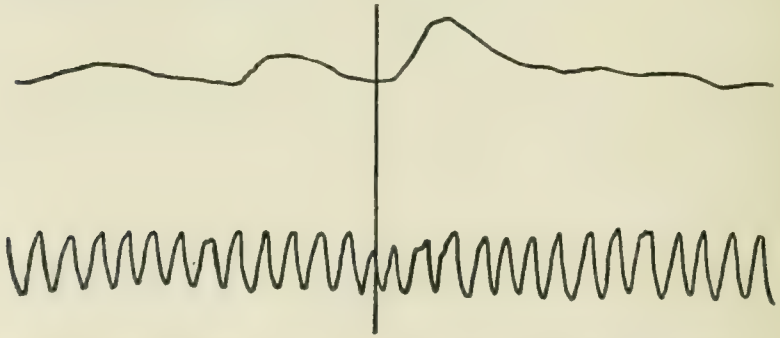

FIG. 3.— Stimulus a whistle. Showing a small expectation curve before the movement of stimulus. The latent period and the changes in the respiratory rate and amplitude are well shown.

The respiratory rate in every case is increased during the rise of the galvanic curve and in one case decreased and in two increased during the fall. The amplitude of the respirations varies in the same way, being less during the rise and increasing in height as the affect passes off. Expressed in tabular form the results are:

	Inspirations per cm.			Height in mm.		
	Weight	Whistle	Picture	Weight	Whistle	Picture
Before stimulus	3.01	2.75	2.88	12.02	12.05	12.46
Rise of curve	3.33	2.77	3.02	10.56	11.35	10.90
Fall of curve	2.76	3.06	3.09	12.32	12.13	11.33

Part V, four short sentences or words were used as stimuli. The sentences were spoken by the investigator and time was allowed between each for the galvanic curve to return to its lowest level. The results are:

	1. Sent.	2. Sent.	3. Sent.	4. Sent.
Height of galv. curve	14.62 mm.	14.48 mm.	19.42 mm.	11.12 mm.
Latent time	3.32 sec.	3.1 sec.	2.83 sec.	3.15 sec.
Time required to reach max.	8.13 sec.	5.82 sec.	7.67 sec.	5.95 sec.

As will be seen in the table the height of the galvanic curve gradually decreases in the second and fourth sentences, while the curve of the third sentence is higher. The gradual decrease in the height of the galvanic curve is to be expected and can be explained by the gradual exhaustion of the affect. The first two sentences were trite ones, and the third was usually one referring to the test-person or one that he could refer to himself, hence the stronger innervation and the increase in the height of the galvanic curve.

The latent time and the time required for the curve to reach its maximum height bear no constant relation to the height of the galvanic curve.

The respiratory curves vary greatly in the different sentences. In two sentences the respiratory rate is decreased and in two increased during the rise of the galvanic curve. The amplitude of the inspirations is always less while the galvanic curve is rising, while the affect is acting, and slowly increases as the affect passes off as the following table will show:

	Inspirations per cm.				Height in mm.			
	1. Sent.	2. Sent.	3. Sent.	4. Sent.	1. Sent.	2. Sent.	3. Sent.	4. Sent.
Bef. stimulus	2.84	2.97	2.71	3.05	12.85	12.59	13.74	12.23
Rise galv. cur.	3.04	2.78	2.57	3.41	11.63	11.27	12.81	11.76
Fall galv. cur.	3.09	2.74	3.13	3.46	12.13	11.98	13.38	13.07

Part VI is a second quiet period of four minutes. As a general rule this part shows fewer irregularities than the first, due to the fact that the test-person had gotten accus-

tomed to the experiment and is comfortably fixed in his place. One marked feature of this part is the change of level of the respiratory curve as soon as the test-person is told that the experiment is ended and he is released from the involuntary tension in which he has been held.

The respiratory rate is slower than in the first quiet period. At the beginning the inspirations are 2.41 per cm., as compared to 2.91 per cm., in the first curve. At the end they are 2.71 per cm. as compared to 2.79 per cm., in the first curve. The height of the inspirations is 12.57 mm., at the beginning as compared to 12.41 mm., in the first curve and 12.17 mm., at the end as compared to 12.26 mm., in the first curve.

What we have designated as expectation curves are changes in the galvanic curve which occur while the test-person is waiting for the stimulus. Naturally they vary according to the individual. Some of our test-persons had absolutely no sign of an expectation curve while others had quite marked ones. These curves are more frequent in the early part of the experiment and are especially marked

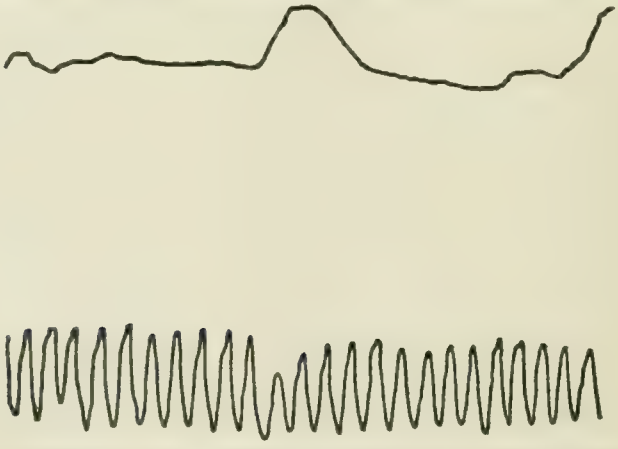

Fig. 4. — Expectation curve. Showing the changes in the electrical resistance and respiration due to expectant attention.

in Part II while the test-person is waiting for the fall of the weight. In height they vary as the reactions to the stimuli but are nearly always lower than these.

The average height of expectation curves is 15.70 mm. This high average is due to the fact that a test-person who has a great galvanic reaction to a stimulus will have many and great expectation curves. The time required for the curve to reach its maximum averages 10 sec., and to fall to the former level 12 sec.

The inspirations from the beginning to the top of the curve average 3.06 per cm., and during the fall average 3.3 per cm. The average respiratory amplitude during the rise is 10.18 mm., and during the fall 10.56 mm.

That the individual differences in the galvanic reactions are great will be seen by the average of distribution of the various averages.

Part II	weight	coefficient	8.09
Part IV	weight	"	8.71
Part IV	whistle	"	2.75
Part IV	picture	"	6.64
Part V	1. Sent.	"	4.7
	2. Sent.	"	4.42
	3. Sent.	"	7.63
	4. Sent.	"	3.98

This coefficient was obtained by taking the average of the sum of the differences between the average of all the figures and each figure. It shows, when large, that there is a great diversity in the numbers of which an average is taken, when low, that the numbers are nearly equal. Two of our test-persons had extremely high galvanic curves and therefore the average and coefficient is greater than would have been the case had these two cases been omitted. Our averages, on this account, are probably higher than other observers will obtain.

The pneumographic results are interesting because they differ from those obtained by other investigators and because they show a different relation between the rate and amplitude than one would expect.

The following table will show the averages of all the

averages of respiratory rate and amplitude and the average of distribution of each:

	Inspir. per cem.	Coeffi-cient	Height in mm.	Coeffi-cient
Before stimulus	2.94	0.16	12.19	0.62
Rise galv. curve	2.97	0.19	11.28	0.50
Fall galv. curve	3.11	0.13	12.19	0.47

As will be seen the respiratory rate increases from the moment of the stimulus while the amptitude decreases during the action of the affect and increases when it passes away. The coefficients in all cases are low, and show that the numbers of which an average was taken are about equal.

The relation between the respiratory rate and amplitude during the rise and fall of the galvanic curve and the high and low galvanic reactions is interesting. These relations were obtained by taking the averages of the sums of the respiratory rates and amplitudes of the high and low reactions of each individual before and after the stimulus.

They are:

During rise	high	rate	decrease 0.05 per cm.
		amplitude	decrease 1.17 per mm.
	low	rate	decrease 0.06 per cm.
		amplitude	decrease 1.06 per mm.

Thus during the rise the decrease in rate is practically the same in both high and low reactions but the decrease in amplitude is greater in the greater reactions.

During fall	high	rate	decrease 0.066 per cm.
		amplitude	increase 1.601 mm.
	low	rate	decrease 0.001 per cm.
		amplitude	increase 0.819 mm.

During the fall of the galvanic curve the rate decreases more in the greater than in the lesser reactions, while the amplitude also increases more in the greater than in the lesser reactions.

During the rise of the curve it is probable that part of the bodily innervation is expended on the various affective

muscular tensions, etc., and consequently the greater the individual reacts with other innervations the less will be expended on the respiration. This would explain the decrease in rate and amplitude in the greater reactions. During the fall of the galvanic curve the innervation is probably returned to the respiration but chiefly to the depth, the rate is slowed in some of the greater reactions.

The relations of the rate and amplitude before and after the reaction show that there is an increase in the rate and amplitude after high reactions and a decrease in the rate and increase in the amplitude after low reactions.

The following table was obtained by comparing the rate and amplitude before the stimulus with the rate and amplitude during the rise of the galvanic curve and the rate and amplitude during the fall of the galvanic curve with that during the rise of the galvanic curve.

Before stimulus	High	rate	increase 0.156 per cm.
		amplitude	increase 0.213 mm.
After reaction	Low	rate	decrease 0.091 per cm.
		amplitude	increase 0.093 mm.

This table shows clearly that the differences in the respiratory changes are much greater in the cases of the higher galvanic reactions.

As far as could be determined there was no regular relation between the height of the galvanic reactions and the individual bodily resistance at the beginning of the experiment.

ABNORMAL TEST-PERSONS

These test-persons consisted of patients suffering from epilepsy, dementia praecox, general paralysis, chronic alcoholism and alcoholic dementia and senile dementia.

The conditions of the experiment are exactly the same as in the case of normal test-persons except that in many cases the pneumograph could not be used.

Epilepsy. There were nine test-persons in this group, the majority being in quite a demented condition. Included is one case of traumatic epilepsy on a basis of congenital

imbecility and one case of epilepsy with hysteria. One test-person was examined immediately after an attack of petit-mal. In this case the reactions to ordinary stimuli were slight or nil, but when threatened with a needle there was a galvanometric deflection of 20 mm. This change was very slow and the curve remained high for several minutes. The threat of a prick of a needle is a very strong stimulus and causes reactions in practically every case where dementia is not marked. In this case the whistle produced a fluctuation of 4 mm. and the weight one of 2.8 mm. The other stimuli were without effect. The latent time for the whistle was 5 sec. and for the needle 15 sec. It required 21 sec. for the curve produced by the needle to reach its maximum.

In this group the differences between the reactions to physical and psychical stimuli are more marked than in normal test-persons.

The quiet period in all cases shows little change. Only one test-person shows what could be considered as an expectation curve.

Five test-persons reacted to the falling weight, Part II. The reactions vary from 3.2 mm. to 35.6 mm. The greatest reaction was in the case of epilepsy and hysteria. The three cases not reacting were in a very demented condition. The averages for the cases reacting are,

Height of galv. curve	7.5 mm.
Latent time	2.25 sec.
Time to top	6.00 sec.

The pneumographic results are:

	Rate per cm.	Average height
Before	2.6	12.28
Rise of galv. curve	2.6	9.73
Fall of galv. curve	2.71	10.81

The galvanometric reaction is only about one-third as high as the normal. The pneumographic results are practically those of the normal cases.

Spontaneous speaking (Part III) could only be tried in three cases. In these cases there was a latent time averaging

2 sec., as contrasted with the normal cases where the curve begins to rise with the moment of speaking.

The results for three cases are:

Height of galv. curve	14.66 mm.
Latent time	2.0 sec.
Time to top	5.5 sec.

These results are less than in the normal test-persons.

The pneumographic results are:

	Rate per cm.	Average height.
Before	3.5	10.92
Rise of galv. curve	3.3	11.52
Fall of galv. curve	2.9	13.62

In the normal cases the amplitude decreases from the moment of stimulus; here it increases.

Part IV. Three physical stimuli, weight, whistle and picture failed to cause any reaction in three demented cases.

The results for five cases are:

	Weight	Whistle	Picture
Galv. curve	26.6 mm.	23.6 mm.	15.4 mm.
Latent time	2.3 sec.	3.5 sec.	2.83 sec.
Time to top	6.6 sec.	6.75 sec.	5.3 sec.

In the normal cases the reaction to the picture was greatest. That to the weight, the one calling up the fewest associations, causing the least.

The pneumographic results in three cases are as follows:

	Rate per cm.			Average height.		
	Weight	Whistle	Picture	Weight	Whistle	Picture
Before	2.8	3.	2.7	8.05	8.23	8.34
Rise	2.5	2.96	3.6	7.1	9.37	6.51
Fall	3.11	3.1	2.9	6.74	8.38	8.03

In the normal cases the height is always less during the rise of the galvanic curve, here it varies very much.

Part V, sentences caused comparatively slight reactions in all cases. In four demented cases there were no reactions.

The results for four cases are:

	1. Sent.	2. Sent.	3. Sent.	4. Sent
Galv. curve	13.4 mm.	7.8 mm.	4.5 mm.	4.5 mm.
Latent time	3.0 sec.	3.3 sec.	5.0 sec.	3.0 sec.
Time to top	3.6 sec.	5.0 sec.	5.0 sec.	2.0 sec.

The reactions decrease in intensity from the first to the third sentence.

The pneumographic curves give the following results:

	Rate per cm.			
	1. Sent.	2. Sent.	3. Sent.	4. Sent.
Before	3.5	3.0	3.0	4.0
Rise	4.0	3.0	3.0	3.0
Fall	3.1	3.3	3.3	2.5
	Average height in mms.			
	1. Sent.	2. Sent.	3. Sent.	4. Sent.
Before	7.2	6.7	5.6	7.0
Rise	6.1	7.5	6.0	5.5
Fall	6.8	6.0	6.6	5.5

Part VI. The second quiet period shows nothing.

In all these cases of varying degrees of dementia the galvanic fluctuations were in direct relation to the degree of mental dulling, the very demented having little or no reaction. In very demented cases the reactions are similar to those of the person cited above after an attack of petit mal, only those stimuli tending to cause pain are reacted to. The problem of this phenomenon is entirely a question of lack of associations.

DEMENTIA PRAECOX

The cases in this group were in various stages of the disease. The reactions, therefore, vary very much in the different cases. Each form of the disease will be discussed separately.

CATATONIA

There were eleven cases of catatonia varying from those in complete stupor to those in a convalescent condition.

Our results are high because one convalescent gave reactions which were those of a normal person. Cases in a condition of stupor give practically no reaction to ordinary stimuli and in those in a depressive state the reaction is also less marked.

The quiet curve varies according to the condition of the test-person. In patients who are actively hallucinated it is very often quite irregular; in patients in a stuporous condition it is practically a straight line.

The pneumograph was not used.

Part II (falling weight) caused a reaction in practically every case, the reaction varying from 1.8 mm. in a very depressed patient to 6 mm. in a patient with active hallucinations and 43.2 in a convalescent. The average deflection for eleven cases was 6.8 mm.

Part III (spontaneous speaking) was not possible with these test-persons.

Part IV (three physical stimuli) caused various reactions as in the normal cases. In five cases the whistle caused no reaction, the patients being in a stuporous, depressed condition.

The weight caused a deflection of 6.3 mm., the whistle 2.4 mm. and the picture 3.9 mm. As in the groups of epileptics the weight caused the greatest reactions.

Part IV (four sentences) in every case gave reactions less than the physical stimuli. The test-person who reacted to the weight with 43.2 mm. reacted to the sentences with a deflection of from 6 to 14 mm.

The averages for four sentences are:

1. Sent.	2.01 mm.
2. Sent.	2.3 mm.
3. Sent.	2.6 mm.
4. Sent.	1.9 mm.

The second quiet curve shows nothing.

HEBEPHRENIA

There were eleven test-persons suffering with this form of the disease. The results while not differing markedly

from those of the former group are quite different from the normal.

As in the former group, the quiet curve is irregular whenever the patient has marked hallucinations.

The weight (Part II) caused a less marked reaction than in the former group the average deflection being 5 mm.

Spontaneous speaking (Part III) in four cases gave an average deflection of 2.6 mm.

The three physical stimuli (Part IV) caused the following reactions: weight 6.8 mm., picture, 4.4 mm., and the whistle 3.5 mm. As in the former groups, the weight caused the greatest reaction.

Part V (sentences) causes a greater reaction here than in the former group but a much smaller average reaction than the physical stimuli. The results are:

1. Sent.	2.6 mm.
2. Sent.	1.3 mm.
3. Sent.	3.8 mm.
4. Sent.	4.2 mm.

PARANOID GROUP

There are four test-persons in this group, one in an early stage, two somewhat demented and one very demented. The latter reacted to none of the stimuli. The pneumograph was used in two cases.

The quiet period is practically that of a normal test-person.

Part II (falling weight) called forth reactions less than those in the two preceding groups, the average being 4.8 mm. The latent time averages 3 sec. and the time required for the curve to reach its maximum 7 sec. The rise and fall of these curves is much slower than in the normal cases.

The pneumographic results of two cases are:

	Rate per cm.	Aver. height in mms.
Before	2.5	13.1
Rise	2.94	8.1
Fall	2.63	11.8

These are practically the results obtained in the normal cases.

Part III (spontaneous speaking) was tried in two cases, giving an average deflection of 4.6 mm.

The pneumographic results are those of the normal cases.

	Rate per cm.	Aver. height in mm.
Before	3.2	11.78
Rise	2.92	9.2
Fall	2.52	10.76

Part IV (three physical stimuli) gives results which resemble those of the normal test-persons in that the reaction to the picture is the greatest.

The results are:

	Weight	Picture	Whistle
Galv. curve	5.8 mm.	7.0 mm.	5.4 mm.
Latent time	2.5 sec.	2.0 sec.	2.0 sec.
Time to top	6.0 sec.	5.5 sec.	6.0 sec.

The pneumographic results in regard to the depth of inspirations are practically those of the normal test-person. The rate varies in every case apparently without rule.

	Rate per cm.			Average height in mms.		
	Weight	Picture	Whistle	Weight	Picture	Whistle
Before	3.0	3.0	2.7	11.90	16.91	11.61
Rise	2.78	4.0	3.2	9.32	11.25	9.50
Fall	2.95	2.91	3.16	12.54	11.31	11.53

Part V. The reactions to the sentences are but little higher than those in the other forms of dementia praecox.

The results are:

	1. Sent.	2. Sent.	3. Sent.	4. Sent.
Height	5.2 mm.	3.2 mm.	2.6 mm.	3.0 mm.
Lat. time	3.0 sec.	5.0 sec.	3.0 sec.	3.0 sec.
Time to top	4.5 sec.	5.0 sec.	2.0 sec.	1.0 sec.

The pneumographic curves for the first two sentences only are given, those of the other two being unfit for use.

	Rate per cm.		Average height in mms.	
	1. Sent.	2. Sent.	3. Sent.	4. Sent.
Before	3.2	3.2	12.52	13.58
Rise	3.16	2.99	12.16	12.1
Fall	2.5	2.48	13.	12.22

The second quiet curve is regular in all cases.

CHRONIC ALCOHOLISM

There are three cases in this group, confirmed alcoholics, but showing no dementia. The galvanometric results only are given. The reactions were fairly rapid and in the majority of instances were greater to all stimuli than were those of the normal test-persons.

The first quiet curve shows nothing.

Part II (falling weight) caused a deflection of 23.3 mm., greater than in any of the other groups.

Part III (spontaneous speaking) caused a deflection of 18.6 mm.

Part IV (three physical stimuli, weight, picture and whistle) caused the following deflections: weight 24 mm., whistle 24 mm., picture 28 mm. These reactions are greater than those of the normal test-persons. The relation of the reactions to the various stimuli in these cases and in normal cases is practically the same in all cases that to the picture being the greatest and those to the weight and whistle being practically the same.

Part V (the four sentences) caused reactions generally greater than in the normal cases, being, 1. Sent. 8.6 mm., 2. Sent. 16 mm., 3. Sent. 20 mm., 4th. Sent. 14 mm.

ALCOHOLIC DEMENTIA

There were three cases of alcoholic dementia which may be contrasted with the former group. In this group the reactions are all less than in the cases without dementia and especially striking is the lessened reactions to the psychical stimuli.

The weight caused a deflection of 9.06 mm. as compared to the 23.3 mm. of the former group.

Spontaneous speaking caused a reaction of 6.8 mm.

The reactions to the three physical stimuli, weight, picture and whistle are very interesting. The picture caused a deflection of only 7.6 mm., as compared to the weight 16 mm., and the whistle 13 mm. The reactions are directly proportional to the physical nature of the stimuli. The picture which in normal cases caused the greatest number of asso-

ciations and the greatest affects here causes the fewest associations and slightest reactions.

The reduction of the reactions to mental stimuli is again well seen in the sentences where they are slight.

1. Sent.	2. Sent	3. Sent.	4. Sent.
3.3 mm.	1.3 mm.	5.6 mm.	2.5 mm.

The lessening here is proportionally much greater than in any of the other groups.

GENERAL PARALYSIS

Nine cases of general paralysis were examined. Two were in a condition of euphoria and one in a period of remission. The other six cases were in a condition of dementia and apathy and gave practically no reactions to the various stimuli.

The quiet period in the cases of dementia shows nothing at all; in the other cases a few irregularities are seen.

Part II (the falling weight) caused good reactions in the two euphoric cases and the case in a remission but no reaction at all in the demented cases.

Galv. curve	21.1 mm.
Lat. time	2.2 sec.
Time to top	6.6 sec.

The pneumographic results in these cases are practically normal.

	Rate per cm.	Average height
Before	3.25	8.7 mm.
Rise	3.1	7.2 mm.
Fall	3.4	9.6 mm.

In the cases not giving a galvanic reaction the pneumographic results for two cases are:

	Rate per cm.	Average height
Before stim.	2.5	21.37 mm.
After stim.	3.0	22.3 mm.

Spontaneous speaking could not be attempted.

Part IV (three physical stimuli) in the three cases caused the following reactions:

	Weight	Picture	Whistle
Galv. curve	9.4 mm.	15.05 mm.	25.8 mm.
Lat. time	2.5 sec.	2.6 sec.	2.3 sec.
Time to top	4.0 sec.	4.1 sec.	7.0 sec.

The high average reaction to the whistle is due to the reaction of the patient in a period of remission whose reaction was 70 mm. It will be observed that the weight in these cases causes the slightest reaction.

The pneumographic results for the three cases are:

	Rate per cm.			Average height in mms.		
	Weight	Picture	Whistle	Weight	Picture	Whistle
Before	3.0	3.65	3.0	5.5	7.9	5.5
Rise	3.0	3.2	3.0	4.5	7.8	9.1
Fall	3.0	3.5	2.9	4.8	7.8	8.8

In the case of two patients not giving a galvanic reaction the pneumographic results are:

	Rate per cm.			Average height in mms.		
	Weight	Picture	Whistle	Weight	Picture	Whistle
Before	2.0	2.0	3.0	20.5	18.5	20.45
After	2.0	2.0	2.5	21.12	19.0	20.50

Part V. The results for three sentences are given. Four test-persons reacted to these stimuli.

	1. Sent.	2. Sent.	3. Sent.
Galv. curve	16 mm.	9.58 mm.	18 mm.
Latent time	4 sec.	2.5 sec.	1.5 sec.
Time to top	5 sec.	4.7 sec.	5.5 sec.

These reactions are practically the same as those of the normal test-persons.

The pneumographic results for these cases are:

	Rate per cm.			Average height		
Before	3.5	3.0	3.0	7.4 mm.	7.1 mm.	10.3 mm.
Rise	4.0	3.3	3.3	10.0 mm.	8.6 mm.	9.0 mm.
Fall	4.0	4.6	4.5	11.0 mm.	8.1 mm.	9.2 mm.

The pneumographic results of two cases not giving a galvanic reaction are:

	Rate per cm.		Average height in mms.	
	1. Sent.	2. Sent.	1. Sent.	2. Sent.
Before	2.75	3.0	20.75	20.40
After	2.75	2.75	21.30	21.50

Paretics in a condition of euphoria and in a stage of remission, when dementia is not pronounced, react well to the various stimuli. They take a very active interest in the experiment, and this may account for the fairly large galvanic reactions. Paretics in a demented condition give no reactions to simple stimuli and correspond to other dements.

SENILE DEMENTIA

There were eleven cases of senile dementia. In these cases the great majority did not react to the stimuli. In some cases even the prick of a needle caused no galvanic fluctuation.

The weight caused a reaction in three cases. The average deviation for the three cases was 5 mm.

Spontaneous speaking could not be attempted on account of the dementia.

The three stimuli (Part IV) gave results which are less than those obtained in any other disease, the weight causing an average deflection of 1 mm., the whistle 1.8 mm., and the picture 4 mm. The relatively high reaction caused by the picture is interesting.

The mental stimuli, sentences (Part V) cause very little reaction.

1. Sent.	2. Sent	3. Sent.	4. Sent.
0.6 mm.	0.6 mm.	0.2 mm.	0.8 mm.

The following table gives a collective view of the galvanic results of all the test persons.

	Wght.	Spontaneous	Wght.	Whistle	I. Sent.	2. Sent.	3. Sent.	.4 Sent.	
Normal	20.6	17.9	17.94	19.72	18.2	14.62	14.48	19.92	11.12
Epilepsy	7.5	14.66	26.6	15.4	23.6	13.4	7.8	4.5	4.5
Catatonia	6.8	—	6.3	3.9	2.4	2.01	2.3	2.6	1.9
Hebephrenia	5.0	2.6	6.8	4.4	3.5	2.6	1.3	3.8	4.2
Paranoid D. P.	4.8	4.6	5.8	7.0	5.4	5.2	3.2	2.6	3.0
Chronic Alcohol	23 .	18.6	24.0	28.0	24.0	8.6	16.0	20.0	14.0
Alcoholic Dementia	9.06	6.8	16.0	7.6	13.0	3.3	1.3	5.6	2.5
General Paralysis Euphoria and remission	21.1	—	9.4	15.5	25.8	16.0	9.5	18.0	—
General Paralysis Dementia	—	—	—	—	—	—	—	—	—
Senile Dementia	5.0	—	1.0	4.0	1.8	0.6	0.6	0.2	0.8

The above table shows that in every case the physical stimuli cause a less galvanic fluctuation than do the psychical but in the cases where intellectual deterioration is marked the reduction is proportionally greater than in the other cases.

The intensity of the reaction seems to depend in part on the attention paid by the test-person to the experiment. In cases of dementia praecox where the internal complexes dominate the affectivity and attention the reactions are slight; in alcoholism and in general paralysis, euphoric state, where the excitability is very great, the reactions are correspondingly greater. In organic dementia where all associative power is lost the reactions are almost nil. In dementia senilis where dementia was very marked even a prick of a needle failed to cause a response.

The pneumographic results in these cases are practically those found in normal cases. There is evidently no rule for the rate but as a general thing the amplitude decreases during the action of the galvanic phenomenon.

That the galvanic fluctuation is caused by the psychical and not the physical factor of a stimulus is shown by the following facts:

The reaction is greatest when the stimulus is such as to call up a great number of associations, *e.g.*, the picture.

A stimulus which causes doubt and perplexity is accompanied with a marked galvanic fluctuation, *e.g.*, where the stimulus is a simple word.

In cases of dementia where associations are few the reactions are correspondingly decreased.

The physical intensity of a stimulus does not bear any regular relation to the size of the galvanic reaction.

The strength of the reaction changes exclusively along psychological constellations. This is shown beautifully in one normal case where an ordinary whistle caused but a small reaction, but the whistle call of the society to which the test-person belonged when he was in school caused a very great galvanic fluctuation.

If the attention is not directed to the stimulus the reaction is small or nil. Therefore we have no reactions in those cases where the attention is seriously disturbed. This can be proven by letting the test-person count or make lines on a paper at the stroke of a metronome. In this case the reactions are practically nil.[1]

SUMMARY

From the above experiments we conclude that:

1. The galvanic reaction depends on the attention to the stimulus and the ability to associate it with other previous occurrences. This association may be conscious but is usually subconscious.

2. Physical stimuli as a rule cause greater galvanic fluctuations than do the psychical in our experiments. This

1 Dissociation Experiments, by Binswanger. Jungs' Diagnostische Assoziationstudien. XI. Beitrag.

may be due to the fact that they occurred before the psychical stimuli, early stimuli nearly always causing greater reactions than do later ones.

3. While the normal reactions vary greatly in different individuals, they are as a rule always greater than pathological reactions.

4. In depression and stupor the galvanic reactions are low because the attention is poor and associations are inhibited.

5. In alcoholism and in the euphoric stage of general paralysis the reactions are high because of the greater excitability.

6. In dementia the reactions are practically nil because of the lack of associations.

7. The reactions show great individual variations and within certain, rather wide, limits are entirely independent of the original bodily resistance.

The pneumographic results may be summarized as follows:

1. The inspiratory rate varies according to the individual and no general rule can be given.

2. The amplitude of the inspirations is generally decreased during the rise of the galvanic curve.

3. This decrease in the amplitude, however, has no relation to the height of the galvanic curve but varies according to individuals.

4. In cases of dementia where there is no galvanic reaction the changes in the respirations exist but are very slight.

BIBLIOGRAPHY

Delabarre. Revue Philosophique. T. 33. 1892.

Ch. Féré. Note sur des modifications de la tension électrique dans le corps humain. Comptes rendues de Société de Biologie. Séance. 14 Jan., 1888.

Ch. Féré. Note sur des modifications de la résistance électrique sous l'influence des excitations sensorialles et des emotions. Comptes rendues de Societé de Biologie. Séance. 3 March, 1888.

P. Mentz. Ueber die Wirkung akustischer Sinnes-reize auf Pulse und Atmung. Wundt's Philosoph. Studien. XI.

Mosso. Ueber den Kreislauf des Blutes im menschlichen Gehirn. Leipzig. 1881.

Sommer. Beiträge zur Psychiatrischen Klinik. Wien. 1902.

Sommer und Fürstenau. Die electrischen Vorgange an der menschlichen Haut. Klinik für Psych. und Nervöse Krankheiten. I. Band, 3. Heft. 1906.

Stricker Ueber Versuche einer objectiven Darstellung von Sensibilitäts-Störungen. Wiener Klin. Rundschau. 1897.

Tarchanoff. Ueber die galvanischen Erscheinungen an der Haut des Menschen, u.s.w. Pflüger's Archive. 1890.

Veraguth. Le Réflexe psycho-galvanique. Compte rendue dans les Archives de Psychologie. Tome VI. p. 162.

Veraguth. Das psycho-galvanische Reflex-Phaenomen. Monatsch. für Psychiatrie und Neurologie. Bd. XXI. 1906.

A. Vigouroux. Etude sur la Résistance électrique chez les Mélancholiques. Thése de Paris. 1890.

R. Vigouroux. Sur la Résistance électrique considerée comme signe clinique. Le Progrés Medical. 21 Jan., 4 Fev., 1888.

R. Vigouroux. L'Electricité du corps humain. Comptes rendues de Societé de Biologie, Séance. 11 Fev., 1888.

Zoneff und Meumann. Ueber Begleiterscheinungen psychischer Vorgänge in Atem und Pulse. Wundt's Philosoph. Studien. XVIII. 1901.

MECHANISM OF A SEVERE BRIQUET ATTACK AS CONTRASTED WITH THAT OF PSYCHASTHENIC FITS

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FRESH interest has been aroused of late, chiefly through the writings of certain German and French workers, in the important group of conditions characterized by transitory affections of consciousness. The older view that only a broad use of the term epilepsy was needed in order satisfactorily to include all such conditions had the merit of simplicity, but not of accuracy. Although the terms psychic epilepsy and petit mal have done hard service in the past, it is now widely recognized that there is a large group of conditions often incorrectly diagnosed under these titles, and particularly under the former. The major section of this group belongs to the psychoneuroses and is not of an epileptic nature. It is not my purpose here to discuss the separation of the epilepsy group from the psychoneuroses, but merely to consider a point in the differentiation of some of the cases that admittedly belong to the latter.

A few words on terminology are first necessary. Oppenheim[1], in his recent important contribution, uses the expression psychasthenic convulsions (Krämpfe) in describing certain attacks characterized by loss of consciousness with or without convulsive movements. Spiller[2] points out that this is too limited an expression, and prefers the term psychasthenic attacks. It might be objected that, unless it is further qualified, this term on the other hand is too wide, as it is applied in psychopathology to widely different mani-

1 Oppenheim, Journ. fur Psych. u. Neur., 1905-6, Bd. VI, S. 247.

2 Spiller, Journal of Abnormal Psychology, February, 1907, Vol. I, p. 257.

festations, both psychical (as Janet's psycholeptic crises[1]) and physical (as recurring pareses.) The word attack suggests to the mind two features of the condition under discussion, its sudden or rapid onset, and its temporary duration. As however there is a third constant feature, namely, affection of consciousness — of all degrees, from slight obnubilation to deep coma — it would be desirable to indicate this also, if possible. The word "fit" embodies the three characteristics common to all the conditions now referred to, and has the further advantage of being the term already in use in connection with two of the most important varieties, namely apoplexy and epilepsy. Janet[2] has applied the designation "Briquet attacks" to the more common hysterical crises, in contradistinction from the elaborate performances described by Charcot. Hystero-epileptic fits would be included under this designation, for, although their existence had long before been clearly appreciated by Louyer-Villernay,[3] Landouzy[4] and others, it was Briquet[5] who first gave us a systematic account of their clinical varieties.

In the diagnosis of the nature of the fits we may collect evidence from observation of the fit itself, or from examination of the patient during the interval period. Considering first the fit itself, we may be able to make an immediate diagnosis of hysteria if the symptoms displayed are those of the classic hysterical fit, the only one described by most text-books as occurring in hysteria. If however the fit is of an epileptiform variety — either grand mal or petit mal — the matter is very different. Heilbronner[6] has remarked that in this variety the difficulty of diagnosis, so far from diminishing with our improved knowledge of the underlying conditions, has considerably increased, chiefly owing to the recognition that more phenomena are possible in hysteria than was previously conceived. It is

1 Janet, Bosten Med. and Surg. Journal, Jan. 26, 1905, P. 93.
2 Janet, Mental State of Hystericals, New-York, 1901, P. 369.
3 Louyer-Villernay, Traite des Maladies nerveuses, Paris, 1816.
4 Landouzy, Traite complet de l'Hysterie, Paris, 1846, P. 144.
5 Briquet, Traite clinique de l'Hysterie, Paris, 1859, P. 327 et seq.
6 Heilbronner, Ueber gehaufte kleine Anfalle. Deutsche Zeitschr. fur Nervenheilk., 1906, Bd. XXXI, S. 472.

becoming recognized that in a grand mal attack there may be absolutely nothing in the nature of the attack itself to indicate its source. Hoche[1] has shewn that one after another the various features that had been advanced as distinguishing an epileptic from a hystero-epileptic fit have been proved to be non-pathognomonic, until at present it is definitely known that every symptom of a grand mal fit, from fixed pupils to sphincter relaxation, may occur as well in functional affections as in idiopathic epilepsy. The features referred to are of course more frequent in the latter condition, so that the value of their observation is diminished rather than nullified.

It follows from the foregoing that while in many varieties of fits it is possible to exclude epilepsy, it is hardly ever possible to exclude hysteria from observation of the fit alone. As a result of this advance in knowledge the modern tendency has been to base the differential diagnosis in doubtful cases upon an investigation of the mental state of the patient during the free interval rather than upon the symptoms displayed in the fit itself. Heilbronner,[2] for instance, refuses to diagnose epilepsy in the absence of the characteristic mental changes found in that condition apart from the fits. In the differentiation and analysis of hysteria during the interval period, Jung[3] and Ricklin[4] have obtained very striking results by the application of the Association-reaction method. Without the use of some exact method of investigation such as Jung's[5] there is of course the great difficulty that two conditions such as hysteria and epilepsy may coexist, and some authorities, including Binswanger,[6] maintain that these two may pass over from one into the other with no sharp dividing line, a view of great theoretic and prac-

1 Hoche, Die Differentialdiagnose zwischen Epilepsie und Hysterie, Berlin, 1902, S 18.

2 Heilbronner, loc. cit.

3 Jung, Journ. fur Psych. u. Neur. 1902-3. Bd. I. S. 110.

4 Ricklin, Die diagnostische Bedeutung der Assoziationsversuche bei Hysterischen. Psychiatr.-neurolog. Wochenschr., 1904. Nr. 29. Zur Psychologie hysterischer Dämmerzustände. Ibid, Nr. 21. v. 22, 1904. Analytische Untersuchung der Assoizationen eines Falles von Hysterie, Ibid, Nr. 46-52, 1905. Kasuistische Beitrage zur Kenntniss hysterischer Assoziationsphanomene. Journ. fur Psych. u. Neur., 1906, Bd. VII, S. 223.

5 Jung. Journ. fur Psych. u. Neur., Bd. III. u. IV.

6 Binswinger, Art. Die Hysterie, in Nothnagel's Spec. Path. u. Ther., Bd. XII, Ht. 1; Thl. 2, S. 835.

tical interest. In children another difficulty is introduced by the frequency with which the psychoneuroses appear in a monosymptomatic manner, and often as purely psychical manifestations, similating for instance petit mal. It is especially under these circumstances that a point of view to which I wish to call attention may become of value, namely the study, through the subconscious memory, of the immediate cause of a given fit. Putnam and Waterman[1] remind us that our knowledge of the subconscious memories of epileptics is at present *nil*, and that by the study of them closer resemblances may be found between the subconscious states of hysterics and epileptics than we imagine. Much work on this subject has aleady been done by the Zurich school, particularly by Gräter,[2] Muralt,[3] and Jung,[4] while on the other hand supposed cases of psychic epilepsy have by this method beon proved by White,[5] Parker,[6] and others to be really cases of major hysteria. Naturally when, as in the latter cases, a disaggregated mental focus has by this means been shewn to be the exciting cause of the fit, the diagnosis of epilepsy becomes thereby excluded. That the same method may prove equally fruitful in the differentiation between hysteria and psychasthenia, a differentiation that is so important on account of their widely different prognosis and treament, I hope to be able to shew by the study of the following case which was recently under my care.

Wm. C., a man-of-war's man aged eighteen, was brought to the Seamen's Hospital, Greenwich, at eight in the morning on March 4. He was then, according to the house surgeon's account, able to walk when supported on either side but seemed very dazed. He was trembling violently, could not reply to questions, and appeared not to appreciate his surroundings. He had been found unconscious in a garden, had gradually aroused and had been immediately assisted to the hospital. There were no abnormal signs in the nervous system.

[1] Putnam and Watermann, Boston Med. and Surg. Journal, 1905, Vol. CLIII, P. 509.
[2] Grater, Zeitschr. fur Hypnotismus, 1899, Bd. VIII, S. 129.
[3] Muralt, Zeitschr. fur Hypnotismus, 1905, Bd. X, S. 75.
[4] Jung, Journ. fur Psych. u. Neur.. 1905, Bd. V. S. 73.
[5] White, Psychopathological Researches. Sidis, New York, 1902, P. 123.
[6] Parker, Ibid.

His state gradually improved in the course of the next hour and he then went to his home near by, returning at 10.30, when I saw him at my visit to the hospital.

At that time he was still trembling and frightened, and complained greatly of severe headache. This he described as a "very unpleasant, dizzy feeling, shooting backward from the top of the head." His hands were very tremulous, but I could elicit no other abnormal physical signs. He told me that he remembered dressing that morning about five o'clock with the intention of catching an early train to Chatham where his ship lay, but that he remembered nothing further until nine o'clock, when he felt revived by going out of the hospital into the open air. From his brother I learned that he was a healthy boy, not particularly nervous, and had never suffered from any similar attack. There was no psychopathic family history.

As his pain was so severe, I asked him to lie down and closed his eyes. His limbs almost at once relaxed, and he began to talk — reluctantly at first — in a quiet monotone. He then disclosed in a rambling fashion the following details, which I have pieced together more connectedly:

There had been some alienation between the boy and his mother, of whom he was very fond, on account of his entering the Navy in spite of her disapproval. It abated, however, as time went on, and he used to pay monthly visits of a couple of days' duration to his home. The last one of these was on February 1. In the middle of February his mother who had previously been in perfect health was seized with pneumonia and died in a couple of days. He could not get leave in order to visit her, neither was he able to attend her funeral. He was particularly distressed by this latter fact and made the curious observation: "If I hadn't gone to sea I should have been able to attend her funeral." On Saturday, March 3, he went home for the week-end, and spent a great part of the time talking about the recent event. Sunday night he sat up with his father and brother till after midnight talking thus. In the night he had a number of dreams about his mother. These seem to have been momentary pictures of her under various cir-

cumstances, but in several dreams there was movement, in which he and his mother played a prominent part. Some were pleasant, some indifferent, and one was exceedingly distressing. In this last he appeared to be returning home from a voyage, and on entering the living-room was repulsed by his mother, whose coldness produced in him great anguish. He woke at this point and heard a clock strike fonr. He again slept but got up just before five. During dressiug he was reflecting on the dreams. As soon as he had dressed he left the house, with the intention of catching the early train. At this time dawn was just breaking and objects were dimly visible through the mist. As he left the front door, on his way down the garden path, he caught sight of an apparition of his mother standing some yards away at the gate. It was extraordinarily vivid and clear and he observed every feature of her dress, including a shawl he had given her, her rings, earrings, etc. She looked fixedly at him, a little reproachfully, but did not move. He was intensely frightened and turned to run into the house. In the act of turning everything "went red," and he fell unconscious on to his face. He could not recover further memories of any occurrence up to the time when some water was dashed in his face by his brother, who found him lying motionless on the path. This was at 7.45, more than two hours later. His memory for further happenings, including the short journey to the hospital and the interviews there with the nurses and house surgeon, was moderately complete; during this time he had been conscious of little besides terror, which "made him shiver."

Having reached this point in the investigation of the case, I recognized that I was in the presence of a very unusual opportunity. Here was a case of major hysteria in the making. A definite focus of disaggregation, invested with a powerful emotion-complex, had been rapidly growing in the past few days and had reached the surface for the first time only a few hours ago. If the boy were merely allowed to recover from his crisis and to return to work, we might expect within perhaps a few weeks some major manifestation of hysteria to develop, possibly paraplegia, blindness or

hystero-epilepsy. Recovery from the crisis meant merely the submergence of this dangerous focus, which sooner or later would again exert its devastating influence on the mind. Fortunately however seeing the case so clearly in the process of disaggregation gave an opportunity to reunite the focus to the main mental content and so prevent further insulation of the powerful body of emotion. I therefore employed a little suggestion along obvious lines, including future memory of all the events above detailed, and woke the patient up. He now felt completely well, was quite composed and clear, with a perfect memory of the recent events, and had no headache. He told me that he with several comrades had once been "mesmerized" in India by a native woman. It is hard to say whether the state that he was in when he recounted the above details was a hypnoidal or hypnoidic one — to use Sidis' terms,[1]— though I incline to the latter view. It certainly was not a hypnotic one in the ordinary sense of the word.

Let us now consider the value that the study of cases like the above has for diagnosis in general. In this particular instance it was fairly evident from the first that we had to do with a functional condition, though of course post-epileptic coma and automatism had to be carefully considered. From what was revealed later it was clear that the unconsciousness during the first two hours was quite profound, although which variety of hysteric coma was present is a matter of only conjecture. The next problem was to decide, if possible, which of the two chief psycho-neuroses — hysteria and psychasthenia — was present. The subsequent recovery of the submerged memories was of the utmost value in the determination of this question, for there is no doubt that the discovery of a single disaggregated focus, having a strong emotion-complex as its centre, was important evidence in favor of the hysterical nature of the condition. The reason why this was so is as follows:

Although from one point of view psychasthenia is excellently summarized in Janet's conception of it as a "lowering of the psychological tension[2]", its pathogeny can

[1] Sidis, Multiple Personality, New York, 1904.

[2] Janet, Les Obsessions et la Psychasthenie, Paris, 1903. La Revue Idees, Oct. 15, 1905, P. 729.

perhaps best be described in terms of chronic disaggregation, as Donley[1] for instance has done in the case of neurasthenia. Nevertheless there are certain precise differences between this disaggregation and that of pure hysteria, the two most important being perhaps the following. In the first place hysterical disaggregation has the striking characteristic of what may be termed cohesiveness, that is to say that the primary disaggregated focus shews a marked tendency to attract to itself similar foci, whether from the main content of the mind or from fresh experiences that have not proved capable of being assimilated. This tendency of the various foci to cohere, and to grow at the expense of the main body of mental content, is of course the explanation of the development of secondary personalities, and the stages by which the incomplete forms of this shew the first signs of a separate self-consciousness provide studies having important bearings on the theory of consciousness in general. A further characteristic of the hysterical disaggregation is its dependence on a single original focus, caused by either physical or psychical trauma; effective dealing with this focus means the disappearance of the disease. The disaggregation of psychasthenia contrasts with that of hysteria on both these points. It never grows steadily as a unitary product outside the main mental content, and so never leads to the formation of secondary personalities, nor so frequently as hysteria to striking physical manifestations. Further its origin is rarely in one single focus that can be dealt with, but in a large number, a fact that renders radical treatment much more difficult. One might summarize some of the aspects of the problem in the statement that the disaggregation of hysteria is massive, while that of psychasthenia is molecular.

The matter is however much more complex in fact because of the extreme frequency with which primary hysteria is complicated by psychasthenic symptoms; the reverse is very rare. So usual is this occurrence that pure hysteria is an exceedingly rare disease; it may be doubted whether there are half a dozen cases of it on record. Morton Prince[2] has recently drawn attention to the ease with which

[1] Donley, Journal of Abnormal Psychology, June, 1906, P. 497.

[2] Boston Med. and Surg. Journal, Oct. 4 and 11, 1906. Vol. 4 CLV. P. 372 and 407. Journal of Abnormal Psychology. Oct. 1906. Vol. 1. P. 170.

hysterical disaggregation, so massive as to have gone on to the formation of multiple personalities, may be overlooked on account of the case presenting itself with the clinical picture of neurasthenia. We thus see that hysteria is more likely to be overlooked than is psychasthenia, so that definite evidences indicating the presence of the former condition are more significant than are evidences of the latter, which if present may or may not be of a primary nature.

To revert to the subject of the diagnosis of a fit of psychic origin, it becomes all-important to try to discover the nature of the disaggregated focus, and one method of achieving this is based on a study of the immediate mechanism of an individual fit. In the case above described, the unitary and relatively simple nature of the disaggregated focus plainly indicated its hysterical nature. It is, by the way, interesting to note its relation to dream states in this instance, in view of the importance attached by Freud[1] to dreams in this connection. The second great characteristic of hysterical disaggregation, namely its tendency to extend, will I trust never be manifested in this instance, for the uniting of the recently formed focus to full consciousness before it had time to establish itself securely has ended its existence as a disaggregated complex. The boy has remained perfectly well up to the time of writing.

I have mentioned here no psychoneuroses other than hysteria and psychasthenia, because it is not at present proved that any other group exists apart from these. Raymond[2], in his recent comprehensive survey of the subject, refuses to admit any other member. Strenuous attempts have been made, for instance, to create a separate group entitled Narcolepsy, by many writers from Gélineau[3], who first used this term, to Friedmann[4], who has recently given us a critical review of most of the recorded cases. It is granted that this syndrome may, in many cases at least, be symptomatic of hysteria or psychasthenia. In fact, several of the earliest

[1] Freud, Traumbedeutung. Wien. 1900.

[2] Raymond, Nevroses et psycho-nevroses, L'Encephale. Partie neurologique, Janvier, 1907, P. 1.

[3] Gelineau, De la Kenophobie, Doin, Paris, 1880. De la Narcolepsis, Paris, 1881.

[4] Friedmann, Ueber die nicht-epileptischen Absencen oder kurzen narkoleptischen Anfalle. Deutsche Zeitschr. fur Nervenheilk. Juni 1906, Bd. XXX. S. 462.

cases were described in connection with kenophobia, or, to use the more customary expression invented by the Germans, agoraphobia. In other cases, chiefly in children, there are no other sympoms present. This however, as Heilbronner[1] points out, in no way proves that the syndrome cannot be grouped under the above two psychoneuroses, which unquestionably are often monosymptomatic, particularly in children. There can be no justification for the establishment of a psychoneurosis group apart from hysteria and psychasthenia, until the psychological mechanism of such a group has been shewn to be different from that of these two conditions.

To sum up, in considering the differential diagnosis of fits of doubtful nature, besides the careful observation of the fit itself, and the investigation of the mental state in the interval periods, we may sometimes be able to obtain valuable indications from a study of the mechanism initiating an individual fit.

CRITICAL REVIEWS

MOTOR APHASIA AND ITS CORTICAL LOCALIZATION. *By J. Dejerine, L'Encephale, May, 1907.*

In this article of fifty pages Dejerine returns to the contest with Marie over the doctrine of aphasia. The author undertakes the task, not only of upholding his previous view,— the classical view — in favor of the third frontal convolution being a motor speech centre, but of determining the limits of this centre, *i.e.*, whether the centre of language is limited to the foot of Broca's convolution, or whether the neighboring regions take part in this function. It is only by serial section, it is maintained by him, that this can be done. Even the most minute "cortical lesions" are more extensive than they appear to be from inspection of the cortex. This is true of them both superficially and in depth. The neighboring convolution, which appears to be normal, will generally be found to have its white matter scooped out by extension of the lesion. True cortical lesions are always subcortical as well. Much more frequent still are lesions which fuse in the centrum ovale at a considerable distance, cutting

[1] Heilbronner, Loc. cit., S. 476.

the fibres which issue from more or less distant convolutions; or, penetrating into the depth of the hemisphere, destroy the central gray nuclei and internal capsule. The lesions often send diverticula irregularly in different directions. The interpretation of the symptoms therefore depends on these conditions which can be determined only by serial sections.

Dejerine repeats his former statement that while it is certain that in the third frontal convolution is a motor centre for language, it has not yet been proved that this centre is sharply limited to the *foot* of this convolution. It is possible, but not yet proved. Future researches may extend the site so as to take in the neighboring cortex, excepting that the adjoining operculum, whose functions are known, can be excluded. (Bernheim had suggested that the limits might be extended to the foot of the second frontal and to the anterior convolutions of the insula.) The same criticism may be made of the exact limitation of sensorial centres.

To date there has been no case of aphasia in which a lesion limited to the third frontal convolution and the underlying white matter, *without extension of the lesion to the white substance of neighboring regions*, has been studied by the method of serial sections.

The author now reports two such cases. The *first* was one of lesion of the anterior two-thirds of Broca's convolution. The symptoms were complete loss of the function of speech, without paralysis of the muscles, and without loss of comprehension of spoken or written language. As to the latter, however, long phrases were not understood, and it does not appear that any but simple tests, such as commands to execute such and such a movement, or to take such and such an object, were used to test the power to comprehend spoken language. Mimicry was preserved. At the end of five months speech returned, though until his death, two years later, the patient "exhibited a certain slowness in the evocation of many words, and he spoke in short phrases, while stopping and beginning again."

The fact that this patient nearly completely recovered the faculty of speech weakens the case as evidence of localization, for it is plainly open to the interpretation that the neighboring regions, the insula for instance, or even Marie's somewhat

mystical "lenticular zone," might take part in or be the real centre for motor speech, and be temporarily involved by vascular (oedema) or other disarrangement. One cannot help regretting that the clinical study of this case was so brief, the report occupying about two-thirds of a page, while such an enormous amount of work was given to the anatomical study. This criticism applies also to the second case. We need careful clinical studies of aphasia quite as much as anatomical studies if we are to solve the riddle of language.

The second case was one of lesion of the head of Broca's convolution. There was loss of the power of speech, but retention of comprehension of spoken language including complicated orders. Reading was affected, so that the patient could understand only isolated words and short familiar phrases. She could not write spontaneously or to dictation, but could copy correctly. Mimicry was preserved, and memory was good.

There was no recovery of the lost functions. This case, therefore, is more valuable for localization than the first. Numerous illustrations of sections of the brain showing the extent of the lesions in both cases are given in the text. "I have no need of insisting," the author remarks, "upon the documentary importance of these two autopsies. . . . [They] demonstrate that *motor* aphasia, called *cortical*, or *Broca's*, can be produced by a lesion limited to the *anterior part* of the zone of language, that is to say, to the *zone of Broca* — without any participation, so far as concerns the primitive lesion (whether on the surface or underneath) of the Rolandic operculum, of the motor convolution, of the zone of Wernicke (temporal cortex and underlying white substance), or of the central gray nuclei.

"They demonstrate that there exists in the *left frontal lobe a zone, the zone of Broca, a lesion of which produces aphasia, and this without any alteration of the temporal lobe, of the external and internal capsules, of the central gray nuclei and the motor convolutions.*" [p. 492]

While such evidence is positive regarding the function of a particular region of the cortex, Dejerine, in making the point of the non-participation of other neighboring parts in the lesion, and therefore in the zone of language, seems to forget that such evidence in this respect is negative and is not proof. The

destruction of a portion of a centre may well produce sufficient disturbance to abolish function.

Dejerine next enters into a renewed discussion of what will be regarded as the most important issue in this aphasia question, namely, the doctrine as maintained by Marie. His argument is presented with force and his criticisms of Marie are decidedly effective. He takes up the evidence upon which Marie relies in support of the contention that the third frontal convolution has nothing to do with language which, as a faculty, is located alone in Wernicke's zone. Marie reports three cases with autopsies, all right-handed people, who with lesion of the third frontal convolution were not aphasic at the time of death; but, according to his critic, information is lacking regarding the condition of articulate speech in the earlier years. It is well known that not rarely motor aphasia clears up (Dejerine's first case is an example); consequently at the autopsy we may find a lesion occupying Broca's convolution alone, as in the first of Marie's cases, or both this convolution and Wernicke's zone, as in his last two cases. In the last two cases it is equally remarkable that these patients did not exhibit sensorial aphasia. Dejerine refers to cases in the literature of patients with motor aphasia which disappeared, although at the autopsy lesion of Broca's convolution was found. Such cases may be explained on the ground that the subject was ambi-dextrous, or on that of the coöperative functioning of the homologous convolution on the right side. A case in evidence of this is cited. Dejerine makes the point that all the cases of Broca's aphasia reported by Marie were cases either of *total aphasia* or *sensorial aphasia*. Consequently, it was quite natural that the sensorial (Wernicke's) zone was injured. Here it should be pointed out that much confusion has arisen from Marie and Dejerine obstinately persisting in using the same term, Broca's, for entirely different syndromes, and then wrangling over the localization of the term. It is the syndrome and its anatomical correlate, not the name of it, with which we are concerned for the purpose of forming a doctrine of aphasia. By Broca's aphasia, Dejerine means the classical motor type, with loss of internal language, without paralysis, and without impairment of the comprehension of language; but Marie means thereby the impairment of the comprehension of language plus

a motor type which he chooses to name anarthria. Though the difference in these clinical syndromes and in the use of the term "Broca's aphasia" is insisted upon by both writers, nevertheless, by using the same term for different syndromes, and the substituting by Marie of anarthria for aphasia, considerable dust is raised, which obscures the discussion.

The first problem then is, whether there is a motor type, what is its syndrome, and what is its location?

Both Dejerine and Marie admit a motor type, but Dejerine postulates two types, viz.:

A. Loss of articulate language, without paralysis and without loss of comprehension of spoken and written language, but *with* loss of internal language. It is localized in the third frontal convolution.

B. The same syndrome, but *without* loss of internal language.

This second type, B, is identical with Marie's type (as Marie admits), only Dejerine calls it *pure* motor aphasia, and gives it a subcortical localization in the centrum ovale, while Marie calls it *anarthria*, and locates it rather vaguely in the lenticular zone.

Here then we have on the motor side the difference and agreement in the two views. Marie denies A, and that the third frontal convolution has anything to do with language. He admits B, with a moderate difference in the localization.

Now taking aphasia so far as it is a *loss of the comprehension of language*, both admit this type and agree to its localization in substantially the same place in the cortex, viz., Wernicke's zone — only Marie attributes the loss of comprehension of language to a "special intellectual defect, a failure in elaboration"; while Dejerine holds to the classical notion of loss of sensory images.

[This it will be noticed is a pure psychological question, though Marie pretends to spurn psychology and imagines he is dealing with simple clinical conditions! whatever that may mean.]

Now both Dejerine and Marie agree that these two clinical defects, the motor defect and the loss of comprehension of language may be combined, in which case we have what Dejerine

calls *total* aphasia, and Marie, *Broca's* aphasia, and over this difference in names blood has nearly been spilt, while the syndrome for which the names stand has been left to shift for itself. Let us compound the names; then for Marie, "total — Broca's" aphasia equals loss of comprehension of language plus *pure* motor aphasia (B); for Dejerine, "total — Broca's" aphasia equals loss of comprehension of language plus motor aphasia (A). The difference lies in the alleged fact that there is loss of internal language in motor, but not in pure motor aphasia.

Corresponding to the two clinical defects there are two anatomical defects; for Marie these are located in Wernicke's zone plus the (motor) lenticular zone; for Dejerine, in Wernicke's zone plus the (motor) third frontal convolution.

It would follow that the loss of *internal* language, according to Marie's doctrine, would be due to the injury of Wernicke's zone; and according to Dejerine's, to that of the motor zone.

When thus stated the fundamental issues underlying this controversy become clearer. The main issue, then, is whether the third frontal convolution is a motor centre for language, or whether this centre lies in the "lenticular zone." A subordinate issue is whether in either case loss of internal language follows a destruction of this centre whichever it may be. Let us take the main issue first. Marie has modified his previous view that the motor lesion may be in either hemisphere and places it in the left hemisphere alone in a "quadrilateral" situated behind the third frontal convolution, limited antero-posteriorly by two lines, one drawn from the anterior, and one from the posterior limit of the insula. The external boundary is the insula, and the internal, the ventricular wall. Dejerine criticizes this localization in that it is so extensive that it is no localization at all, for antero-posteriorly and tranversely it includes the extreme capsule, the claustrum, the external capsule, the lenticular and caudate nucleus, the anterior and posterior segments of the internal capsule, and the optic thalamus.

This "quardilateral" corresponds in fact to the seat of predilection for softening of and haemorrhage into the brain, and it is incontestable, says Dejerine, that in the external lesions which are so often found at the autopsies of aphasics the "quadrilateral" is often, but not *constantly nor necessarily* injured,

whether in cases of motor, sensory, or total (Broca's) aphasia. Dejerine then proceeds to analyze with trenchant criticisms the anatomical connections and functions of the constituent parts of this "quadrilateral." The optic thalamus can be eliminated as no one has attributed to it the rôle of language.

As to the lenticular nucleus, to which Marie is inclined, to say the least, to attribute a language function, the study of secondary degenerations shows that the lenticular-caudate nuclei have practically no connection with the cortex, but that they are united with the optic thalamus and sub-thalamic regions, and *do not send any fibres* into the foot of the cerebral peduncles. To attribute to the lenticular nucleus and to its "afferent and efferent fibres a considerable part in phonation" is a pure hypothesis without basis in any known fact. It is interesting to know, particularly in view of recent papers supporting this hypothesis (Mills and Spiller, Dana), that Dejerine refuses to admit that this nucleus plays any part in the mechanism of phonation. If a lesion of this part accompanies dysarthria, the symptoms depend upon the concomitant injury of the internal capsule. As is well known, a unilateral lesion of the knee and anterior part of the posterior limit of the internal capsule produces pseudo-bulbar paralysis, from injury to the fibres coming from the cortical centres for the face, tongue, etc.

There remains then in the "quadrilateral" for examination, the internal capsule and the externo-extreme capsule. The internal capsule is composed of fibres whose origin and ending is known, and may be eliminated also. The constituent fibres of the externo-extreme capsule are then analyzed and discarded as positive factors in the problem, but considering the mode of arterial irrigation of this capsule, and its connection with the third frontal and the Rolandic operculum, it is not surprising that it is often found involved in the original lesion, or only degenerated when it escapes. We do not know a case where a lesion limited exclusively to the external capsule has produced pure motor aphasia, while on the contrary, cases of lesions of Broca's convolution occur when the external capsule is remarkably intact, *e.g.*, the two observations reported by Dejerine.

Recently Marie has discussed the superior and inferior limits of his "quadrilateral," basing his conclusions on the case

of MM. Laignel-Lavastine and Solomon. Dejerine, analyzing the anatomical findings in this case, finds that the lesion lay *above* the central ganglia, occupied the ascending parietal, penetrated into the centrum ovale, cut the white substance underlying the Rolandic operculum, and partly that of the *third frontal.* The centrum ovale being made up of conducting fibres alone is not in question, nor is the Rolandic region. The third frontal Marie rejects as a region of language. What then becomes, Dejerine asks, of the lenticular nucleus as playing a considerable rôle in the mechanism of language? Marie, he thinks, "is thus approaching more and more the *classical* location of pure motor aphasia called subcortical, for the lesion of the centrum ovale above the lenticular nucleus is that which was found in my (Dejerine's) original cases of motor subcortical aphasia (1891)". . . .

Dejerine then points out the different fibres passing in the centrum ovale *above* the lenticular nucleus and argues that, as it contains *the mass of fibres issuing from the region of Broca, if pure motor aphasia* ("anarthria") can result from a lesion of the white mass, it must be because of impairment of the function of this gray matter from which the white fibres issue. "There is no other interpretation possible unless we endow the white matter with functions which hitherto have been the property of gray matter."

Dejerine then analyzes a recent case reported by Marie and Montier in which there was "total — Broca's" aphasia, and in which a lesion involving Wernicke's zone and the *two Rolandic convolutions* on the left side, was found, on *macroscopical examination* (the brain was not sectioned). He argues that assuming that the macroscopic appearance showed the whole lesion, it could not have produced a motor aphasia, but only, as every one knows, a *paralysis*, and implies that the motor aphasia should be interpreted as one of involvement of the foot of the third frontal convolution which is inserted into the destroyed operculum.

There remains to consider the difference in the views of Marie and Dejerine regarding the nature of the intellectual defect, resulting from a lesion of Wernicke's zone, by which there is failure of comprehension of language. Marie makes much of his contention that this is a special intellectual defect, one of

intellectual elaboration, and involves the "*stock* of knowledge acquired by didactic procedures." In this article Dejerine does not discuss this question, but considers, as is well known, the failure of comprehension to be due to loss of sensorial images.

The criticism which one is entitled to pass upon these views is that so long as both (and the same is true of other writers) confine themselves to the most superficial clinical findings and the anatomical defects, neither is qualified to hold any opinion or pass any judgment upon it whatever. Marie boasts that he is a pure clinician and knows nothing of psychology in which he disclaims interest. He is satisfied to note a failure of comprehension of language as a whole, without further analysis and psychological investigation. He simply postulates a defect of "elaboration" involving "the stock of knowledge acquired by didactic procedures." We are entitled to ask, elaboration of what? Of memories of movements, or sounds, or visual images, or what?

The loss of comprehension of language is a pure psychological question, and should be studied as such, and until the defect is so studied it is more than naïve, it is childish, to postulate "intellectual defects" which tell us nothing. There are some psychological data which support the view that so-called word deafness is due to loss of the auditory "images" of words, but the problem deserves further and deeper investigation, and until this is done the less discussion about such "doctrines of aphasia" the better.

MORTON PRINCE.

THE MAJOR SYMPTOMS OF HYSTERIA. *By Pierre Janet. The Macmillan Co., New York and London. pp. vii + 345.*

These fifteen interesting lectures on hysteria, delivered during the season of 1906 at the Medical School of Harvard University, represent the latest French researches on the psychology of this protean disease, as given by one of its foremost students. In the first lecture the author states briefly the important data of the problem of hysteria and points out the necessity for a psychological study of the neuroses. The second and third lectures deal with fugues, and monoideic and polyideic somnambulisms. A number of interesting cases are cited and analyzed,

both from his own observation and from the reports of others. Such cases are typical forms of hysterical accidents, and are due to complete dissociations of consciousness, characterized by amnesia and an exaggerated and independent development of the emanicipated idea or ideas. Where one idea is dissociated he applies the term monoideic; where there is a dissociation of a system of ideas, the term polyideic is applied. When there is an aimless wandering and the somnambulistic episode is more or less protracted, it is called a fugue. The fourth lecture deals with the interesting subject of double personalities. The author points out how one state can dominate over the other and how in these cases of alternating personality the mental level rises and falls, thus producing the pluritic amnesia.

Lecture V. is taken up with the convulsive attacks, fits of sleep and the artificial somnambulisms. The inferior forms of somnambulism are hysterical fits and hysterical sleep, and these latter are frequently paralytic phenomena. The fits are imperfect forms of somnambulism, often nothing but aborted somnambulistic attacks. In hysterical sleep there is a decided lowering of all the sematic functions. All hysterical accidents can be artificially produced, especially the somnambulistic states. Hypnotism is artificial somnambulism, the hypnotic state has never any character which cannot be found in hysterical somnambulism, and the subjects are mostly hysterics. The author dogmatically asserts that it is impossible to hypnotize the epileptic or psychasthenic. Hypnotic states exactly resemble hysterical somnambulism, except that they are developed artificially instead of spontaneously.

To the motor phenomena of hysteria, the motor agitations, contractures and paralyses, two lectures are devoted (VI and VII). In all the motor disturbances of the limbs the mind is intact. These disturbances are divided into phenomena of exaggeration of movement, such as tics, choreas and contractures, and into phenomena of deficient motion or the paralyses. In differentiating between the psychasthenic and hysteric tic, Janet states that the former are accompanied by consciousness and attention and when the latter is not inhibited there is an increase of the tic. Distraction decreases the tic. In hysteria the opposite holds true, the movements are impeded by attention and

become more regular in distraction. Every type of tremor may be found in hysteria. Hysterical anaesthesia is a certain species of absent-mindedness, the sensation itself has not disappeared, but is merely dissociated, that is, not connected with the totality of consciousness. The same holds true of the hysterical amnesias; there is no real oblivion or destruction of memorial images, but merely an impossibility of the reproduction of these images. In hysterical paralysis, it is the idea of the motion of the limb that is lost and not the motion itself. Sometimes this loss comprises an entire system of images of movements, as in astasia-abasia.

Lecture IX is devoted to the hysterical disturbances of the special senses, particularly the disorders of vision. Here the contraction of the visual field, the blindness and the hemianopsia, are due to the same dissociation of the visual system as applies to the motor and sensory phenomena. There is no real blindness in hemianopsia, the visual stimuli are merely suppressed.

Lecture X is taken up with the speech disturbances. Janet discusses mutism, aphasia, aphonia, etc., shows their contradictory characteristics, and how absolutely unassociated they are with any organic changes either in the brain or vocal cords.

Lectures XI and XII are devoted to the disorders of alimentation and respiration. Much space is devoted to hysterical anorexia, which Janet believes is due to an anaesthesia of the stomach, to disturbances of organic sensibility with loss of hunger sensation. All types of respiratory ties may occur, peculiar barks, hiccoughs and almost coprolalic ejaculations. An hysterical Cheyne-States respiration is described, which possess the peculiarity that the respiratory rythm becomes normal when the patient is distracted.

In lecture XIII Janet discusses the stigmata of hysteria. After dismissing anaesthesia and falsehood as necessary accompaniment of hysteria, he states that the most fundamental stigma of hysteria is suggestion, and he again points out the marked unity between experimental suggestion (hypnosis) and spontaneous suggestion (hysteria), thus agreeing with the recent conceptions of Grasset. To the hysterical stigmata the fourteenth lecture is devoted. He divides these into two classes, the proper and common. The former occur only in hysteria, the latter are also found in the closely related neuroses, neurasthenia and psychasthenia.

Suggestion is the development of an idea, abstraction is exaggerated absent-mindedness, and both exist to an astonishing degree in hysteria. The subconscious phenomena are the results of this disposition to an exaggerated absent-mindedness. To all these he applies the phrase "retraction of the field of consciousness"; the mind is too narrow to take in a number of ideas. In anaesthesia, sensation escapes personal perception, in paralysis, movement, etc. The more common stigmata of hysteria are the feelings of incompleteness, the need of attracting attention, abulia, etc. All of this has now prepared the way for the admirable psychological summary which comprises lecture XV. Ideas are very important in hysterical accidents, they are powerful, dominating and act upon the body in an abnormal manner. The retraction of the field of consciousness either gives too much power to certain ideas or certain ideas may drop out of consciousness. Hence on one hand the exaggerated mobility and in the other the peculiar amnesias, anaesthesias and loss of motor control (paralyses). Hysteria therefore is a disease of personal synthesis, a form of mental depression characterized by the retraction of the field of personal consciousness and a tendency to the dissociation and emancipation of the systems of ideas and functions that constitute personality. Its starting point is a depression, an exhaustion of the higher functions of the brain. The dissociation seems to follow several laws — it reacts most powerfully on a function that was weak and disturbed, the most complicated functions disappear and the particular function is inhibited that was in full activity at the time of the emotion.

We have given a very brief summary of a most important series of lectures. The stress laid upon the purely mental side of hysteria, as distinct from the classical physical symptoms, is a step in the right direction. These lectures of Dr. Janet form a pertinent example of the important results that can be attained by purely psychological studies.

I. H. Coriat.

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NOTES ON A CASE OF SPONTANEOUS SOMNAMBULISM

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THE case here reported is one of spontaneous somnambulism in which the patient reached a condition ordinarily not distinguishable from waking life. A full history of the case is had for the period of its greatest aggravation, and close observations were made for several months. The general features of the case are simple. A young man, in his Senior year at college, is subject to passing frequently into secondary states in which he performs all the acts of normal life but concerning which there is no memory when he wakes. In the secondary states, however, he has a full memory of his waking life.

PRELIMINARY ITEMS REGARDING THE CASE

Our subject, "Fred," is twenty-three years old, about 5 ft. 10 in. high, weighs in ordinary clothing about 167 lbs., is of robust physique, hearty address, and a brunette with brown curly hair. At first sight he presents no unusual appearance. On closer inspection, however, he is seen to have central opacity of the lenses, known as congenital cataracts, of both eyes, a not very clear skin, rather thick coated tongue, and not the best of teeth. A further study of his case leads one to think him affected by a grave neurosis, probably hysteric.

Fred was raised on a farm in Central New England and lived as does an ordinary farmer lad up to the time of entering an academy to prepare for college. Not much of his family history has been ascertained. His father is in good health,

mother probably nervous. He has maternal cousins (young ladies) who are nervous. One of these, about Fred's age, is melancholic and for a while was almost insane. A maternal grandmother, past eighty, has recently had cataracts removed. With two kinsfolk there have been acquired cataracts. A maternal aunt suffered with convulsions as a child.

It is probable a full knowledge of Fred's case would show neurotic symptoms dating from an early age. He has long been *somnambulistic*. He remembers waking up one night half a mile from home, stark naked, and his dog biting at his feet. This happened about the age of twelve. His life at the academy and during the first part of his college course was not disturbed by any special disorders. He took part in ordinary sports, rowed on the Freshman crew, but gave it up on account of an attack of *la grippe*. During this time, however, he slept much during the day time, talked in his sleep, had vivid dreams and was off and on somnambulistic.

When a child Fred had an accident that might lead one to suspect a traumatic origin for his epileptiform attacks. He was thrown out of a buggy and struck upon his head. The injury at the time was considered serious but he seemed to recover properly.

THE STAGE OF AGGRAVATED SOMNAMBULISM

About a year ago, the symptoms of Fred's disorder became more aggravated and began to attract attention. This was in the spring of 1896. His somnambulism became more acute. At this period also there began to develop attacks of an epileptiform nature. It does not seem that he was subject to strong convulsions or injured himself in these attacks. Shortly after the first attack he went home for a little rest. While at home he had two convulsions in which he fell to the ground. Another attack which he felt coming on once when alone he thought he averted by resisting. After returning to college, he had at intervals other slight spasms or convulsive seizures. Some of these came on him while lying on a couch; others which he had while on his feet were not severe enough to throw him to the ground.

There probably were not more than a dozen of these seizures all told. Some of them seemed more severe than the petit mal of epilepsy but did not reach the stage of the cry and severe convulsions of grand mal. He probably had auditory aurae, and in one of the first seizures involuntary micturition. The attacks happened when awake and seemed to have no direct connection with his somnambulism.

About January, 1897, the case was complicated by somnambulism in the day time, becoming frequent.

To understand this phase of the case well, one must know how college boys live together in the dormitories around a large campus. Since most of the students are in excellent health, slight ailments are made light of, and one must become seriously ill before giving up and going home. In this way Fred's case has run a rather remarkable course without attracting the attention of any besides his student acquaintances. In fact his abnormal actions have been the occasion of much sport both to himself and to his friends. But the matter has been so prolonged that he is becoming more sensitive and concerned about it. He is also rather humorously afraid of attracting the attention of some psychological "shark" (college slang for a great enthusiast or expert at anything). He speaks of himself as Dr. Jeckyll and Mr. Hyde and will talk freely and joke about his case to one who has gained his confidence. The writer of this was a graduate student in psychology at the time of becoming acquainted with the case.

The transition to a state of secondary consciousness was apparently the outgrowth of somnambulism. I shall speak of alternating states when referring to the two psychological conditions which characterize Fred's life, although in strictness the alert, somnambulistic, *secondary state seems to include* [*remembers*] *most of the consciousness of normal life*. It seems to be a distinct secondary consciousness in the following respects, however; *that his mood and disposition are different in the secondary state, that he ordinarily knows and feels himself in a different state from waking life, and that what he does in the secondary states forms a closed consciousness which is wholly forgotten when he is normally awake, but which is remembered and the old life resumed when*

he enters the secondary state again. There are suggestions of his remembering some happenings of the secondary state when he is awake, but this practically never occurs. Also there have been times when it was hard for him to tell whether he was "asleep," that is in the secondary state. It also seems that the secondary state has different gradations and depths. This is most indicated by disposition and mood. I have not been able to discover any systematization of memories which shows directly more than the alternating sets of consciousness.

I shall also speak of the secondary state as being "asleep." This use of the word "asleep" to designate the actions of what a stranger would call a vivacious and wide-awake young man grew up naturally among Fred's friends on account of the course his somnambulism took. For a long time Fred has been subject to great drowsiness. He would throw himself down on a couch and sleep at most any time of the day. He was troubled with sleepiness when studying and would be overtaken by drowsiness in frequent and peculiar ways. All this was before he began to go about in the daytime with his eyes closed. He would often exhibit somnambulistic suggestibility while in these drowsy states. The fellows got to suggesting things to him and anything uncommon which happened when he was not his ordinary self was called being "asleep."

About January, 1897, Fred began to go about in the day time *with his eyes closed.* There was a remarkable acuteness of senses which his friends could not understand. He could play checkers without apparently seeing the board. There probably was hyperaesthesia and acuteness of the sense of touch amounting to what is called "transposition of the senses" — touch enabling him to see. When lying on a couch, with closed eyes, he was able to tell what was going on, could make jokes, smoke a cigarette, reach for it if it fell on the floor, and seemed practically awake only that he kept the eyes closed, and evidently was in a secondary state.

The stage of somnambulism, with closed eyes, gave way to a sort of "vigilabulism," or going about "asleep," yet *with eyes open* and in full command of his faculties.

The transition to this fully alert somnambulism had a period during which his eyes were only partly open, his actions not yet normal, giving a rather ghastly appearance to his face and to what he was doing. As nearly as I can find out about this stage it was similar to the cataleptic somnambulism of hypnosis, which some French writer says needs only to be seen to be remembered.

Formerly it was possible to tell by Fred's appearance, mood and speech when he was "asleep." Now one usually has to ask him whether he is asleep or awake to find out which state he is in. There have been times when he, himself, was in doubt as to what state he was in. He might say to a friend, "Am I 'asleep' or awake now?" and the answer would be, "Wait a minute until I see whether you get into a 'fight' with me." Fred usually can tell the difference in the way he feels and in what he remembers. If he remembers as a real fact some episode which he knows happened in the secondary state, he concludes that he is "asleep," *i.e.*, in the secondary state. In the waking state he could only remember what he had been told about it; and might be really anxious to know more than he had been told.

It is quite common for him to cry to his room-mate or a friend, "Wake me up, I am going to sleep," or, after having been "asleep," "Wake me up, I don't want to sleep any longer!" The early method of waking him up was to rub his face with the fingers, or tap his nose. He could wake himself up in this manner, and on waking up would fling his arm out in a comical manner and utter some ejaculation as he came to himself. These methods of waking him becoming ineffectual, more violent physical methods became necessary, such as spanking him with a book. The mere threat to do this was sometimes sufficient and he would wake, going through the playful agony of having been spanked. Once when rubbing his face with the fingers would wake him Fred went to sleep an incredible number of times in a few minutes, dropping off almost the moment the fingers left his face.

As a rule Fred seems unable to wake himself from the secondary state, but he probably could bring it on at any

favorable time by placing himself in a drowsy attitude. Either the waking or "sleeping" may come on him spontaneously and suddenly. He has been known to go to "sleep" between two sentences. It is a common thing for him to rise in the somnambulistic state, go to wait upon his eating-club (it is the custom for students to help out expenses by waiting upon a table of class-mates), and wake up with a lot of dishes in his hand, yet wholly unaware of the persons to whom he was bringing the orders. The frequency of such happenings has taught him great skill in concealing the perplexity of waking in a strange situation.

The relative amount of time which Fred passes in the two states is hard to ascertain. There seems to be no rule about it. There seems to be no rule about when he goes to "sleep," the depth to which he goes "asleep," or the length of time he remains "asleep." He says a short "sleep" will sometimes feel as if he had been asleep a long while, or in waking out of a long "sleep" it may seem as if what he was last doing in the primary state was only a few minutes before. At times he feels as if he could almost remember what happened when he was "asleep." He may of a morning wake up "asleep" — in the secondary state — and stay in it from a few minutes to all day. Sometimes he alternates between the two states several times in the same day. He has even remained several days in the secondary state, or he may go days without any somnambulism. His friends think him more disposed to sleep if he has studied hard or exerted himself, and it seems that he is almost free from these attacks when he takes a vacation.

There is another point to which I will only refer here but speak of later on. Fred is sometimes, though not always, quite a different person when "asleep." This feature of his case has probably given him most concern. He may quarrel with his friends, be boisterous, clownish, or talk in a way not his wont when awake, or he may do rash or ill-advised things. When he is "asleep" he *remembers all these unpleasant things* and often does not like to be "asleep" on this account. At other times he is at outs with everybody and will not let himself be waked at all.

In some respects Fred is the better man when "asleep."

He then remembers more — both states — and is often skillful and acute in a way which surpasses his waking life. It is said that he can get his lessons easier, reads Hebrew better at sight, and is often a more able, but also more easily angered or offended person.

The changes in disposition produced by the secondary states vary greatly. I have frequently seen Fred in the secondary state without being able to note any difference in mood. On his passing into a "sleeping" state his room-mate thinks he can sometimes detect a difference in the quality of the voice. At other times the change is apparent and he may become either sober, clownish, comical, exalted or angry.

In normal life Fred is a rather pleasant, interesting fellow. He has done good work in his studies — considering the handicap of his eyes — and has been at least the average college boy in ability to get along. He is a young man of good character, sensitive about his reputation, and has been planning to enter the ministry. This probably is more from a desire to rise above the calling of a farmer than from any marked devotional vein in him.

Dreams play an important part in his life. He has many pleasant and vivid ones and also unpleasant ones. It has several times been observed that external happenings became incorporated into his dreams, as for instance when lying near a warm radiator he dreamed he was at a fire and when someone sprinkled water in his face he dreamed the hose had been turned on him. He finally became so amenable to suggestions in his sleep that the fellows had him performing all sorts of histrionic feats and could produce actual hallucinations. It is quite a common thing for Fred to repeat a dream, or on succeeding nights to take up and continue a dream. Once he dreamed in detail of an event which happened when he was "asleep." Waking up ordinarily he surprised his room-mate by telling him of a peculiar dream he had had, not suspecting that he was narrating an actual event of which his room-mate knew.[1]

[1] This may have been a memory of the secondary state similar to those recorded by Sidis in the Hanna Case. — Editor.

DISTURBANCES OF ORDINARY LIFE CAUSED BY THE ALTERNATING STATES

The inconveniences arising from Fred's dual existence are principally from two sources. First, *the loss of memory* of what happens during the somnambulistic state. Second, *an altered mood* or disposition which often attends the secondary state. These outworkings can best be seen from illustrations.

Loss of Memory. As regards studies, Fred may prepare a recitation when "asleep," and of course, be unable to benefit by it, if he happens to be awake when called to recite. He has notebooks which he finds contain notes taken by him, but concerning which his waking self knows nothing. He made an appointment with one of his professors for an examination. This happened when he was "asleep." Shortly afterwards, while awake, talking to his friend C., he remarked that he must arrange for this examination with Professor X. C. knew that he had already been assigned a date for it, and, that he had already arranged the matter. Fred, accustomed to such predicaments, readily accepted the statement of his friend, and remarked that he would have to go to work at once preparing for the examination. One examination in Biblical Literature he passed quite satisfactorily when "asleep." He may attend classes and recite while "asleep," but on the whole, he complains that he does not feel the responsibility of keeping up his work properly when "asleep." Owing to the college physician having granted him certain dispensations, it is easy for him to be irregular in attendance and recitations without being called to account for it.

He is more venturesome and careless with his finances when "asleep" than when awake. He borrows money from the fellows and of course forgets to pay it when awake. He smokes more, is at times tempted to drink and be quarrelsome. For quite a while his waking self knew nothing of this. He has indulged in liquor only a few times but seems very easily affected by it. In the secondary state he subscribed for a paper, bought on credit an expensive pipe, and undertook a canvassing agency; none of which he

probably would have done while awake. At another time, during a snowstorm, he bought a snow-shovel for forty cents, and by cleaning off sidewalks with it earned sixty cents. The next day, in his room awake, he complained of his arms feeling sore, and wondered what was the matter with them. A few moments later dropping off to "sleep," he suddenly asked what time it was. He was told it was 10.30. Then he said he had lost a job, for he had promised to clean off a sidewalk for one dollar. He said he now knew what was the matter with his arms, and explained how he had been working hard shoveling snow.

He sometimes gets a letter, reads it, wakes up, and is on the point of getting mad at someone for having opened his letter. Later on such a possibility is made into a joke by exclaiming: "I tell you what, old man, it is lots of fun. Get a letter from your sweetheart, read it and enjoy it; then wake up and read it all over again as if it were a new one."

Alteration of Mood. The second point of being of a different temper during the secondary state deals with the more serious aspects of the case. It is a well-known and common thing for neurotics to be subject to pathological changes in disposition, sometimes no more than a slight irritation, but in extreme cases, amounting to dangerous outbreaks. Often the temperamental changes with Fred are slight, and at times unnoticeable. During the earlier stages of his somnambulism, shortly after the period of his convulsive attacks, however, he was so affected that his friends feared the matter might become serious. Also there have been a few recurrences of this troublesome mood. It is impossible to tell just to what extent this tendency developed because Fred really never did anything, and there was a sort of feeling all along that much that he was threatening was not in earnest. Boys often do this in fun, so that it is hard to tell when earnest begins. This much seems certain, however. He was more suspicious, boisterous, careless of language, "touchy" and quarrelsome when "asleep." I do not know of any special moroseness or attacks of hypochondria to which he seems subject. At one time he was going to quit living with his room-mate but got over his spell. He often recurs to this theme when "asleep."

His room-mate is a noble fellow who has put Fred under no end of obligations by his kindness and forbearance, and all this Fred acknowledges when awake, and even shows more than ordinary regard for him. Once his room-mate stopped his exit from the room when he was minded to "lay someone out" with whom he had quarreled. Fred threatened to strike him with a chair in order to get past, but, when his room-mate did not yield, he laughed and said he was only fooling. At another time he was going about the campus with a hatchet hunting for some one. One acquaintance he surprised by calling him a "sponge," said he came around his room borrowing tobacco and other things; turning to his water demijohn he continued, "Won't you have a drink of water now?" He also called him an onion, and said he made him (Fred) go to "sleep" every time he saw him. Speaking for himself, Fred has told me that he does not like to be "asleep" because he "makes more breaks then." Fred often smokes more when "asleep," not being a great smoker ordinarily.

There is something of a compensating nature in the secondary state coming from a quick and keen intelligence. At times memory seems to be better, over and above having at command the items of ordinary waking life, and becomes exalted in a remarkable way. He can read Hebrew better at sight and memorize a passage quicker. He surprised his friend C. the other day by quoting the first two chapters of Genesis which he had memorized in preparing for a sight translation. Once his room-mate was going to wake him in order to read over to him some history notes. Fred told him to go ahead as he was because he could grasp the matter easier.

About the time of Fred's transition from somnambulism with closed eyes to somnambulism with open eyes he was very boisterous. One day he said he was going to choke somebody who happened to be in his room. This was apparently not in anger but just to be doing something. Two fellows doubled forces on him, threw him down and pounded him vigorously in order to wake him up. Nothing would awake him, however, and he lay there "bellowing like a steer." One of his friends speaking of this period

said he even used to "howl" after he went to bed at night. The value of all this as symptoms must be read in the light of the scuffling and "talking" which college boys indulge in ordinarily.

The graver changes in Fred's character gave his friends considerable concern and even caused some hard feeling until the case began to be better understood. It was hard to tell that they were not dealing with a wholly responsible antagonist. Happily these unpleasant features have been reduced to a minimum. How completely this quarreling at times depended upon his secondary state is illustrated by the fact that, upon waking up, he has in a friendly manner dropped in on the same fellow with whom there had been an unpleasant scene a few minutes before; this of course being due to a complete forgetting of his secondary state. At other times Fred could tell from bodily feelings or in some way, that he had been angry. He was not conscious of the details of the matter, however.

Fred is often a rather clownish or comical person in the secondary state. He is given to making doggerel verses and hitting off the peculiarities of professors and acquaintances. He is also clever at reciting.

EXALTED SENSIBILITIES AND HISTRIONIC SKILL IN THE SOMNAMBULISTIC STATE

There are many respects in which Fred's somnambulism has taken a form similar to the hypnotic trance. First, the almost instantaneous passing into it or out of it. Second, the loss of memory of what happened in the somnambulistic state. Third, a marked amenability to suggestions, going to the extent of producing hallucinations. Fourth, histrionic skill. Fifth, exaltation of the power of memory and hyperacuteness of the senses. Along with this must be borne in mind the close relation that all bears to drowsiness, sleep and dreams.

November, 1896, he came to Bru's room to be coached on a lesson in German. After some preliminary dallying he took a seat and Bru. began to read to him. Presently Fred's book fell from his hand and Bru. saw that his eyes

were closed. This he had not noticed before, probably on account of the spectacles. Bru. stopped reading, but Fred cried out, "Go on!" Bru. read wrongly or words not in proper connection. Fred would notice it and interpose objections again. A little later the fellows got him to recite "How Ruby Played." This piece is an exaggerated description of the wild playing of an artist on a piano. It ends with a great hubbub, clamor and crash. Fred recited it with fervor, jumped high off the floor at the "crash bang" ending, and as he came down woke up and did not know what he had been doing. The last thing he remembered was being downstairs, probably an hour previously.

Suggestibility. The beginnings of suggestibility go back a long way. When a Sophomore in the Spring Term, about April 1895, Fred would be asleep on a couch and the fellows would jingle their keys near him. At this he would sing the sleighing song, "Jingle bells, jingle bells, jingle all the day," etc. They would sing a college song which is associated with punishing the Freshmen. Fred would join in it and lay about him thinking he was helping initiate the Freshmen. He would talk in his sleep and thrash about in bed considerably. He seemed to have a great many dreams as has been already narrated.

In the spring of 1896 Fred used to go to sleep several times in an hour while studying Lucian — Greek Prose. At that time he exhibited an abnormal exaltation of memory in the following way: Fred would be reading the text and his room-mate and others would be looking up words in their dictionaries. While reading aloud to the fellows he would drop off "asleep." The boys would call to him to go on and he would continue the text accurately for a short while without looking at it. They made sure that he had had a chance to glance ahead in only the slightest way. To remember the text as he was doing, it seemed necessary for his eye to photograph and hold a part of the page or for his memory to be abnormally exalted. The drowsy state evidently had sharpened his abilities. With closed eyes in the half somnambulistic state he could repeat accurately at least six lines ahead. If asked to go further he would continue with nonsense Greek. The glancing at and remembering

six lines of Greek Prose would ordinarily be impossible for Fred.

The giving of "suggestions" to Fred grew up out of the way he would respond to jingling keys and the singing of the fighting college song while dozing. The fellows got to suggesting to him situations, usually episodes with which he was familiar, and he would carry them out with great fervor and histrionic skill. He would change instantly from one situation to another upon their telling him that something else was happening. It seems that he acted in these states very much like a good somnambulist under hypnosis. Without any direct or conscious hypnotism, he was made to perform hypnotic feats. It appears that he was amenable to suggestions from most any one who happened to be enjoying the performance, and could be made to go through all sorts of antics like a stock hypnotic subject. It is probable that actual visual and tactual hallucinations were produced. Most of these things took place when he would be dozing on a couch in somebody's room.

Fred has a sensitive stomach. The fellows would tell him of some stale chicken he had once eaten at which he would show such disgust that he actually vomited. In this somnambulistic state they could bring him to the point of vomiting and then turn him suddenly to something else by merely suggesting it. When Fred began to have convulsive attacks, the fellows began to think something serious was the matter and gradually discontinued the histrionic seances.

Exaltation of Sensibility. The matter of exalted sensibilities was not investigated as thoroughly as it should have been. What we know of it is rather incidental and from observations made without scientific precautions. Owing to its spontaneity, however, I narrate it as given me. It is certain that Fred could go about with his eyes apparently closed and suffer no seeming inconvenience. He apparently could see even when his eyes were fully closed. Fred is an excellent checker player and would beat the other fellows no matter what state he was in. On one occasion they were playing checkers, but had to use chess men for the pieces. Fred's eyes were closed, but he went through the game as if he saw and knew everything. After the game they tested

him regarding what he could see. They arranged different chess men on the board and put some of them behind a tobacco box. Fred made a mistake in telling what men were on the board until he touched one of the men. Then he seemed to see the whole board and rapidly told where certain pieces stood. While playing a game Fred's opponent had tried to slip a piece off the board, but Fred detected him and cried, "There is a man missing there!" Once when his eyes were closed, the fellows introduced him to one of their number saying, "Here is so and so," but giving the wrong name. As he shook hands with him Fred replied, "No, it isn't; it is——" and gave the young man's correct name. The person was not a familiar acquaintance whom he should have recognized by a mere hand shake.

The most remarkable feat he seems to have performed was one day while lying on a couch in his room across from a board where two men were playing checkers. His eyes were closed, he had not been following the game, and he was not situated where one could ordinarily see the board. Suddenly he cried out, "You can jump two men!" They all laughed at him but he got up and went over to the board and showed them a place where Bar. could take two men, but which nobody had noticed. The fellows tried to explain this as mind reading, but they could not imagine whose mind had been read, for nobody knew of the move.

Fred himself, has no explanation to offer of his abilities. He does not know of it at first hand when awake, and when "asleep" he just does it. The question of simulation has scarcely been raised in this case. I have met only one of his acquaintances who believed Fred to be "shamming." He could give no reason for being skeptical, however, except that he did not know how any authenticated cases could exhibit the marvels of Fred's actions. The general feeling among the fellows is that the secondary states are genuine and that Fred does not try to deceive with regard to them. Fred may show a trace of that love of recognition so common with hysterics, but on the whole he is usually free from it. Outside of a certain waggishness, I think Fred has not complicated matters to an appreciable extent by simulation.

THE EFFECT OF HYPNOTIC SUGGESTIONS

On account of the grave nature of the case, I have refrained from disturbing Fred by experiments and from using hypnotism except in the simplest way and when intending it as a therapeutic agent. Fred has been placed in slight hypnosis by me only three times. The first occasion was an attempt to teach him to wake himself from the secondary state so as to escape the rough handling which was being resorted to. I will describe his visit to my room and the method employed. Fred had never been formally hypnotized and knew practically nothing about the subject. In actuality autohypnosis and somnambulism had often taken place. I base what I now write on notes taken at the time.

March 30, 1897. About 9 P.M. Fred and his room-mate B. called on me. Fred was "asleep." Early in the morning I had told him that I was going to teach him to wake himself. We noticed nothing in his demeanor specially characteristic of a secondary state. He showed a little reserve but only what would be natural on a first visit. Once I remarked that it seemed he was a better man when he was "asleep" because he knew more. Since this is the case why did he not want to be "asleep" all the time? He looked quizzical and replied that he "made more breaks when he was asleep." Asked in what way, he said, "Go upstairs and fight with Bi. and such things."

Without telling him or his room-mate what I was doing, I had him settle comfortably in his chair and asked him to look steadily at a small square of white paper (about 1 inch square) which I pinned on my breast. My orders were about as follows:

"Look steadily at this white spot until your eyes feel drowsy, and then close them. Think of nothing else, but become drowsy and sleepy. You will have no headache or pain, but go right to sleep." After about a minute his eyes closed. At the same time I held my watch to his ear and continued: "Listen only to this watch and my voice. They will help you go to sleep. Go quietly and soundly to sleep now."

After three or four minutes Fred's head was drooping forward, and with closed eyes he seemed quite somnolent. Judging him ready for "suggestions," I spoke to him about as follows: "I am going to have you wake yourself up. Count 'One, Two, Three' and then clap your hands together, and at that you will wake. All ready now; count 'One, Two, Three,' clap your hands and wake up!" He at once counted in an energetic voice, "One, Two, Three," clapped his hands sharply together, then opened his eyes and looked about at his room-mate and myself in a surprised way. To break a somewhat awkward silence, I reached to him a plate having on it a banana and the skins of some we had been eating when he first came, saying, "Won't you have another banana?" This remark brought to light how complete was his lapse of memory. He looked puzzled and hesitatingly said, "One of those (skins) is mine?" and stopped at this conjecture, with rising inflection, waiting for me to corroborate it. I told him he had eaten one banana while "asleep" a few minutes before. He said he now remembered nothing since about 6.30 P.M. (Earlier in the day he had been asleep from 1 to 6 P.M., at the end of which time he had been awakened in the room of one of his acquaintances; then had stayed awake perhaps half an hour; then had been "asleep" until this visit to me about 9 P.M.) I explained to him that I had taught him how to wake himself; but that he did not now remember how it was done. I then told B., in his presence, not to tell him how he was waked.

Two days later he found out how I had waked him. Going to sleep in his usual off and on manner, he had tried my recipe several times with great success and much to his pleasure. It grew seemingly harder to work, however, and he resorted to trying to go sounder to sleep before using the formula. While at his eating-club on the morning of April 1st, he waked himself and was surprised to find himself repeating, "One, Two, Three" and feeling as if he had clapped his hands. After his breakfast he came to his room and stayed awake until about 10 A.M. Was "asleep" five or ten minutes during which he went downstairs. While there he woke himself up by the recipe, but after he was awake he found himself repeating, "One, Two, Three,"

"One, Two, Three," and clapping his hands several times unable to stop it. After coming up to his room and telling of his experience, Fred soon went to "sleep" again, and had a slight quarrel with A. He remained "asleep" only a few minutes when he woke himself again by seating himself in a rocker swaying to and fro until he went sounder to sleep, then saying, "One, Two, Three" and clapping. He again had to repeat and finally broke off with the interjection, "Oh——, can't I stop this!" Telling me of his experience later, he said it seemed as if his whole body was paralyzed for a few moments, except his tongue and hands which kept repeating "One, Two, Three" and clapping.

This repetition was probably a special case of the tendency to continue induced actions which is found so peculiarly in some subjects. The following from experiments on hysterics will make clear my meaning. Pierre Janet, treating of catalepsy, writes:

"Une autre modification que l'on peut imposer aux membres cataleptiques, c'est le mouvement. Au lieu d'abondoner le bras dans un état d'immobilité, on le fait osciller deux ou trois fois et on le làche au milieu du mouvement: l'oscillation persiste comme tout à l'heure la position persistait. On peut aussi communiquer aux bras, aux jambes, à la tête de ce mannikin, un mouvement que ne s'arrêtera pas avant le fin de l'attaque. Le même caractère se retrouve encore, quoique moins souvent signalé peut-être, dans les descriptions de la catalepsie naturelle."[1]

Monday, April 5, 1897. About 10 A.M. Fred and his room-mate called at my room. Fred was "asleep" and wished to be waked up. He had gone to "sleep" Saturday afternoon and had been "asleep" and awake several times since. He had waked himself up by my recipe, but had to repeat, "One, Two, Three, clap" too many times. He was in a comical humor rather than showing signs of ill-temper. I then hypnotized him as before. The suggestion was given that he should wake at a given signal and remain awake during the remainder of the week (five days). This succeeded so far that he remained awake till April 9th, or four days.

[1] L'Automatisme Psychologique, Paris, 1889, page 17.

Friday, April 9, hypnosis as before. It was suggested that he wake himself by the original method but without "repeating" the words "One, Two, Three," etc., after waking and that he would stay awake. He did not repeat after waking and he remained awake thirteen days.

Fred's natural sleep, dreaming, talking in his sleep, and somnambulism are all intimately connected with the "sleep" of the secondary state. It is a common thing for him to rise of a morning "asleep" and also to go to "sleep" as above after lying down on a couch. Early one Sunday morning recently he found himself on the campus in his night robe, calling out to his room-mate. When Fred was "asleep" again he was asked what was the matter that time. He replied that he had dreamed that ruffians were after them both, showing that in this state he remembered his somnambulistic dreams. It seems also that Fred sometimes in his natural sleep dreams of events that took place in his secondary state, and that the memory of these dreams may be carried over to a regular waking state.[1] This would be a very peculiar way of partially escaping the amnesias.

The following incident gives an idea of the surly mood sometimes exhibited by the secondary state and characterizing the change of personality. To one studying the case, the pathological nature of this anger seems certain. When a "quarrel" or "fight" is actually on, however, it is hard to convince yourself that you are not dealing with a clever, acute and responsible antagonist. As was said before, Fred is often "asleep" without being surly. He may be in an exalted, comical or clownish mood, or he may be like his ordinary self. What I now describe was Fred's first face-to-face unpleasant words to me. I would not narrate the incident except to emphasize the lesson I learned by it. In dealing with these cases we are dealing with human beings, and any invasion of the privacy of their lives except when carried on with the utmost delicacy and from the highest motives will ultimately be resented.

Thursday, April 29, 1897, Fred came to my room

[1] Prince found that this was the case with Miss Beauchamp. ("The Dissociation of a Personality.")

alone at 2.30 P.M. I could see at once that he was in a surly and unaccustomed mood and judged him to be "asleep." His remarks soon left me in no doubt. He took a seat in the usual armchair in a fairly polite manner, but began conversation by saying, "I came up to tell you, Mr. L., that we'd better play quits. I don't want any more of you; German or anything. (We had been reading some German together two days before, and at the time he was extremely pleased to get the assistance.) You have been kind to me in some things, but I can get along without you." I replied, "Well, Fred, I judge you are 'asleep'". He retorted, "Yes, I am 'asleep' and bad 'asleep' too, and I can stay 'asleep' until I get awake." I asked him if he remembered my talking to him Sunday night when he was going to bed. (I had asked him about this once before when he was awake and he did not remember seeing me at all.) He replied sarcastically, "Yes, you said I had been disobeying orders." All this time Fred was sitting in the armchair rather restless but making no demonstrations. At no time did he go beyond sharp and often clever retorts. His general attitude was surly, but at times he seemed to agree wholly to what I said, would smile and seem appeased. He could not be kept so and would relapse into the first surly strain, saying that he wanted to play "quits" with me. There was a peculiar contraction of the brow and at times a look of concern or trouble in the face. I assured him that he could play "quits" with me whenever he wished but that I wanted him to do it in a good humor. I had a friendly interest in him and had subordinated scientific interest entirely to this. He said that I had been making inquiries among the boys. (I had talked to his acquaintances about the case simply to get the interesting things they had seen. I felt free to do this because he himself told me everything about his case and had his room-mate do the same.) He replied that he did not want me to "pump" anybody about him, that what he had himself told me was enough. He was not wanting any psychological "shark," Prof. L., or anybody studying his case. It did not make any difference whether or not he was a "freak." I replied, "You, perhaps, are not nearly as different from other people as you think you are. There

have been plenty of cases of spontaneous somnambulism. Somnambulism is not so bad, is it? You know the Latin — walk around in sleep." He retorted, "I studied Latin once and I studied German." Then with a smile, "But I don't want any more lessons with you." Then after a moment's pause, trying the surly attack again, "You tire me." I replied, "Well, Fred, I am sorry, I often tire myself. If I have been making too many inquiries, that can easily be remedied. You are 'asleep' and cross now, but it will be all right when you wake. I sympathize with you. We can make every thing all right. I shall not get angry at anything you say." At this point he seemed to accept what was said and, with a normal man, I believe good nature would have been immediately restored. There was a morbid clinging to his first train of thoughts, however. I do not believe there was any well-defined purpose in his mind other than giving expression to the ill-feeling that had taken hold of him. Having "had his say" he was ready to go. He bade me good afternoon all right, but when I offered to shake hands with him he refused. I rather insisted, but he said that I shook hands with him too much. I watched him go down the street. He moved rather slowly and had the appearance of a man in a morose or abstracted mood. His appearance would almost suggest somnambulism.

I was turning to enter my room when Dr. S. passed. I told him Fred was going down the street "asleep," and that he had just visited me for a "fight." We caught up with Fred and Dr. S. tried to persuade him to go over to his office in order to be waked up. Fred replied, "No, I won't let L. wake me." I said, "Dr. S. will wake you then." Dr. S. joined in "Yes, come over and I will try it." Fred would not go, said he did not want to be waked up, could wake himself up. Before this he had told Dr. S. that he was tired of my hand shaking; that I had shaken hands with him four times in one day. I explained that this was a habit I formed in Germany. Dr. S. said it was the way I did with everybody. Upon Fred saying he could wake himself, I had said, "Oh no, you can't," trying to get him to go over to Dr. S's office. He replied warmly, "Yes, I can. You have no power over me." I began to see that he was

working up a theory that I had some "power" over him and that hand-shaking had something to do with it. He and Dr. S. went down the street, but Dr. S. could not take him to his office and Fred went back to the campus. He quarreled with his room-mate and was going to move out into a room he had rented. The threat of moving out he often made. Fred stayed "asleep" all evening. He attended a physiology lecture and had another talk with Dr. S. He was still at outs with me. Dr. S. tried to wake him by tapping his nose but it did not succeed. As a compromise he told him he would wake up all right in the morning.

The next day, Friday, April 30, he was awake and perfectly normal in mood. Having been informed of his condition the previous day, he called to apologize. He was entirely free from his ideas of the day before, but I took no further risks in doing anything which would arouse antagonism.

On Monday, May 3, he was "asleep" but in an exhilarated, comical mood; there was no desire to quarrel. He joked and laughed and exhibited what I have called the clownish mood. After being awaked this was gone.

Thursday, May 6, while "asleep" he was again in a quarrelsome mood. Came to his room at 2 P.M. under the influence of liquor; said he had been put out of a saloon (the knowledge of this was a cause of grief to him when awake); had "fights" with several people, threatened a friend with a chair and struck him in the mouth with his fist, etc.

Soon after this the subject of these observations left college and since then has been lost sight of.

UNUSUAL ILLUSIONS OCCURRING IN PSYCHOLEPTIC ATTACKS OF HYSTERICAL ORIGIN

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MISS B., the subject of the following experiences, is a student in Psychology in Pratt Institute. The attacks began at the age of six years and have been of frequent occurrence up to two years ago. The attacks always occurred when the subject was lying down for rest and they came on entirely unsuspected by her. A narration of other conditioning circumstances will be postponed until the experiences have been described.

When the seizure began, all visual objects in the room gradually moved away, or receded in depth, until they appeared to reach the approximate distance of the far horizon. This backward movement was real and striking in appearance; the objects did not simply *appear* farther away, but moved away. This movement varied in rapidity for the different attacks; sometimes it was extremely rapid, sometimes slow and gradual, but as a general rule its velocity was described as that of a brisk walking rate. During the movement, objects kept their relative positions to each other and maintained their normal size; this latter fact is unusual, for as a general rule objects appear smaller in size during these receding illusions. The objects appeared clear cut, distinct and substantial in character; there was no apparent confusion or blurring of images, no hazy, illusory nor immaterial impression. The whole phenomenon bore the mark of definiteness, genuineness, and of material reality.

After the backward movement, one of three things may occur: (1) the objects may remain *visible* and stationary at their distant position. This occurred but rarely; (2) the objects may appear to move back into a light, hazy cloud and disappear from view, as though they were swallowed up by a dim, veil-like mist. This distant background of haze remains in view during the continuance of the state; (3) all consciousness of visual space may disappear; the subject

becomes temporarily *blind*. The sight of her own body is gone. Everything just disappears into nothingness. When asked to describe the feeling, the subject replied that there was nothing to describe but mere blankness and nothingness. The whole visual world was blotted out of existence and she felt alone in empty nothingness. This condition obtained in the majority of the cases. The disappearance of the visual field was always simultaneous; it did not occur by a gradual contraction from the periphery nor did one half of the field tend to disappear first.

At the end of the attack, the visual objects merely *appeared* to view back in their original positions; they never appeared to move back, even in the case where they had remained continuously visible in their distant position throughout the state. They always *moved away* from the observer in the beginning, but *got back* again without movement.

Oftentimes, the subject's eyes were in such position that her body was not seen. When it was visible, it behaved as did the other visual objects. She saw herself becoming indefinitely elongated, remaining in that condition so long as she retained visual consciousness.

The subject feels confident that her eyes remained open during the entire trance, no matter whether the visual objects disappeared or not. Of course, she has no proof of this fact. However, her belief is probably correct since her eyes were open during the oncoming of the state, before visual consciousness disappeared, and, as we shall describe later, she was afflicted during this time with aboulia. Moreover, the visual field does not become black when the objects disappear. She either experiences a transparent hazy space, or there is mere nothingness,— not blackness, nor an experienced void, but a total lack of any kind of visual sense consciousness.

The subject also feels that she was temporarily *deaf* during the states, but has no certain knowledge of the fact. Generally she was alone during the attacks, but when persons have been in the room they have never complained afterwards of not being answered if they had asked her questions. Consequently no decisive test has ever developed. Observers

have no knowledge of her condition during these attacks, since she does nothing to attract attention, and they refrain from disturbing her since she has lain down for rest. Possibly even if they had failed to elicit answers to their inquiries, they would have said nothing of it, nor suspected that anything was unusual, taking it for granted that the subject was sound asleep. The subject is somewhat reticent about these experiences and has never made them an object of experimentation. In fact this would be impossible inasmuch as their occurrence can not be predicted, and persons in the room have no suspicion of any unusual occurrences. However, she is under the impression that she could not hear, as she knows that sounds did often occur while in this condition but she has never been able to remember anything about them. Furthermore she had the sense of absolute quiet and stillness.

She also experienced the *tactual* illusion of the infinite elongation of her body, no matter whether she saw herself or not. In fact this tactual elongation occurred during the first attack when her body was not visible. Her head felt stationary, while she could feel her feet slowly and gradually moving away, finally coming to rest in the far distance. This bodily feeling of indefinite extension existed throughout the experience and occurred in every attack. Her bodily space experience was continuous, *i.e.*, she did not feel herself as broken up in parts, each part being in a separate distinct position; she experienced all the intermediary space between her head and feet; she felt stretched out to a great length, her feet touching the distant space horizon.

I have on second-hand information which I deem reliable, a somewhat similar case in respect to these tactual and visual illusions. A young lady was much afflicted with fainting spells in which she entirely lost consciousness. The attacks came on gradually and the subject could afterwards remember the oncoming experiences just preceding the loss of consciousness. Visual objects always moved backwards to distant positions, while she both saw and felt her nose becoming elongated. Generally she *felt* her nose grow until it protruded twelve to eighteen inches from her face. Whether these visual illusions are a constant

phenomenon in trance and fainting spells, I do not know, though they are said to be of frequent occurrence during the loss of consciousness due to etherization; however, they occur quite frequently with some people under normal conditions and are accompanied occasionally by a corresponding auditory illusion. I have notes of a dozen of such cases collected from a class of 150 students. James[1] quotes from M. Taine an account of an insane patient describing a similar experience. "Objects grew small and receded to infinite distances — men and things together. I was myself immeasurably far away. I looked about me with terror and astonishment; the world was escaping from me . . . I remarked at the same time that my voice was extremely far away from me."

The subject, Miss B., was always afflicted with a complete *aboulia* during the experiences. The situation was extremely frightful, especially during the first attacks, and she would mentally struggle in an agony of fear to move or cry out for help. But voice and movement utterly failed her; she was afflicted temporarily with a complete *paralysis* throughout the continuance of the state. There was no feeling of bodily rigidity or muscular strain under these conditions. The subject felt as she does in a condition of complete rest or relaxation; this was her conscious experience, no matter what may have been the actual condition of her muscular tonicity. Whether any movements actually occurred or not, the subject does not know; she cannot remember any such movements if they did occur, while she felt entirely helpless and motionless. It is possible, of course, that some slight movements did occur; no movements corresponding and proportionate to her volitional efforts could have existed, however, otherwise her cries and struggles would have attracted the attention of members of her family who sometimes were in the same room.

As to cutaneous, organic and kinaesthetic sensibility little can be said. The subject was asked if she felt the pressure of her clothes, the lounge or bed upon which she was lying, or was aware of the respiratory and cardiac activities. She has been questioned upon these points

[1] Principles of Psychology, Vol. I., p. 378.

several times, but invariably replies that she does not know, that she cannot remember either the presence or absence of such experiences. It was suggested that since she experienced the feeling of relaxation and of bodily elongation, evidently cutaneous and organic sensibility must have been present. The force of this contention was admitted but the subject still maintained that she could remember nothing as to the presence or absence of any specific cutaneous or organic experiences, nor could she say as to the sensory content of the experiences of relaxation and elongation. Nor is this strange, for probably no one can remember his cutaneous sensibility to the bed or his normal respiratory experiences in any specific instance long past. These customary experiences leave little effect upon memory, unless *unusual* in some respect. It is more probable that the subject would have had some remembrance on these points in the case of organic and cutaneous *insensibility*, rather than when the senses were intact. Her consciousness was focalized upon the unusual and striking aspects of her experiences and it is probable that she could have given no better introspective account immediately after the attacks. While no positive proof can be given, the writer is of the opinion that these senses were intact during the seizures, otherwise she could not have experienced the tactual illusion of bodily elongation.

She can remember nothing unusual in regard to the olfactory and gustatory sensitivity either during or after the trances. She is positive that she did not experience any bad tastes or odors after the seizures.

Her *consciousness* is described as composed of visual images of surrounding space and objects, with an intense struggle to regain voluntary control of movement and voice. She could not say that this feeling of struggle was composed of kinaesthetic imagery; it was likened to similar experiences in dreams when afflicted with a complete helplessness in the face of impending disaster. This struggle for control has always been in the focus of attention in every seizure. There has never been any train of mystical ideas, no visions, no passive floatings on the stream of consciousness, no vague awareness nor unconcerned detached impersonality. Consciousness is intense, focalized and markedly personal in

character, and is centered around the one end of regaining motor control.

These states terminated in two ways: (1) as a rule the paralysis first disappeared and then the visual objects appeared back in their original positions as soon as a volitional movement was effected; (2) the visual objects first came into view and then the feeling of motor relief occurred immediately afterward. During the oncoming of the states, the backward movement of the visual objects and the paralysis occurred simultaneously.

The *sense of time* was magnified during the trances. Their apparent duration varied between wide limits. Sometimes the state was judged to be of a momentary duration. At other times the states were described as existing for hours and hours, or days and days, and twice for years and years. In the majority of cases the apparent duration was quite long. In those cases where the objects remained visible during the trance, the apparent time was judged to be much shorter on the average than when vision was entirely lost. This may be due to an actual difference in duration, or it may illustrate the law of the inverse relation existing between sense of duration and the amount of sense content filling in the experienced interval. This magnification of time is, of course, characteristic of dreams and similar states. Only once did circumstances arise whereby definite knowledge of the actual duration was gained. The subject happened to note the time before lying down and the trance came on immediately. At the end of the attack when she once more gained voluntary control, she found that ten minutes had elapsed. This seizure was one of those whose apparent duration was described in terms of days and days.

During the period from six to eight years of age, the subject ascribed an actual material reality to these experiences. The movements and disappearances of persons and things and the bodily elongations were regarded as real, as part and parcel of the many objective phenomena of everyday life. No suspicion of illusion ever tinged her mental attitude. This attitude can be readily understood inasmuch as she never mentioned these experiences to anyone during this time, the attacks occurred frequently, and, moreover,

they had the same givenness and independence of mental control as any objectively determined experience to which our minds naturally ascribe an independent and objective existence. The subject explained her lack of scepticism as due to the fact that she had been brought up on a goodly allowance of fairy stories in which the sudden appearance and disappearance and transformation of persons are the usual occurrences. She believed in the reality of these stories in the sense that they were narrations of real events. Consequently when similar events occurred in her own experiences, they were taken as a matter of fact, as part of the established order of things. When eight years of age, an elder brother noted her serious attitude toward fairies and began teasing her in the patronizing manner befitting lately acquired and superior wisdom. She asked her mother about the reality of fairies and was informed that they were merely imaginary beings. Thereupon, she related for the first time her own trance experiences and how her mother had moved away to the far distance and had disappeared from view.

The experiences were quite frightful, especially in the earlier attacks, and the fright persisted some time after recovery.

The subject's memory of these experiences is clear-cut and definite, although, for all we know, it may not be exact. She felt no alterations of personality in the attack; she felt herself in a queer predicament, of course, but she never questioned but that she was the same personality throughout.

The first of these attacks which she remembers occurred at the age of six years, during her convalescence from a severe case of typhoid fever followed by a relapse; it occurred after she was able to be up and around, but before she had regained complete strength. For two years thereafter, the phenomenon was of frequent occurrence, averaging about one seizure every two weeks. From that time on, from eight to twenty-four years of age, the attacks have been gradually decreasing in frequency. They occur during more or less irregular periods. These periods average two to three per year. During any one period, lasting several days, she may experience several attacks. The seizures are irregular in occurrence, no prediction being at all possible. Neither

are there any premonitory mental symptoms of any character preceding each attack. Each trance comes on entirely unexpected by the subject. The phenomenon has not occurred within the past two years.

The attacks always occurred when the subject was lying down for rest during a condition of marked fatigue, and while she was in a state of complete relaxation. This fatigue might be either mental or physical, though it was generally of a physical origin. The trances never occurred when lying down *with intent to sleep*. Sometimes the subject was afflicted with insomnia during the periods within which the attacks occurred. Insomnia was not an invariable accompaniment, though it never occurred except during these critical periods. The attacks were not correlated with any specific disturbances in health; their frequency was correlated with the condition of her health in a general way, in that the frequency of the seizures has been gradually decreasing of late years while her health has been steadily improving. As a rule the trances did not occur at times of worry, unhappiness nor depression. She experienced no pains, feelings of pressure or tightness, buzzings in the head, or tendencies to faintness or vertigo, which often characterize hysterical seizures. She experienced the phenomenon at any time during the day or evening, and with all conditions of illumination in the room. As a general rule the attacks were of more frequent occurrence during twilight with poor illumination. While some of these conditions invariably accompanied the phenomenon, yet they did not invariably give rise to it, for, as has been mentioned, the occurrence of these seizures could not be predicted.

The subject has been in very poor health ever since her attack of typhoid. Of late years she has gradually attained to better health and she now considers herself well and strong. She had attacks of pneumonia nearly every winter, which fact is indicative of her low state of vitality. She was under almost constant treatment by physicians, but owing to the transient life of her family she was not under the care of any one physician for any length of time. I shall give only those symptoms indicative of hysteria.

From eleven to thirteen years of age (five years after the

beginning of the attacks), she experienced a fluctuating cutaneous anaesthesia. This anaesthesia was confined to a small area about the size of a dollar, and lasted as a rule from one to seven days. The anaesthesia would then disappear for some time and afterwards appear on some other portion of the body. Never more than one spot occurred at a time. The position of this spot varied over the body in an irregular manner. This area did not exhibit analgesia, but the subject can remember nothing as to its temperature sensitivity. It did not disturb movement in the least. The subject was always conscious of this area, from the fact that it felt queer and abnormal. Hysterical subjects vary in this respect; sometimes they are immediately conscious of these areas and sometimes they never suspect their existence until they find out about them in some way. The periods of anaesthesia had no relation in time to the trance attacks.

At the same time (eleven years of age), there developed a fluctuating internal soreness and tenderness. This occurred at but one place at a time, lasted from one to seven days, disappeared and then reappeared in another part of the body after some time. Neither was this phenomenon related to the psycholeptic attacks as to the time and regularity of its occurrence. This transient hyperalgesia has persisted up to the present time.

The subject has never noted any other alterations of sensitivity, such as fluctuations of temperature sensitivity, changes in auditory acuteness, or contractions of the visual field. The size of her visual and color fields and her auditory and cutaneous sensitivity are now normal. No bilateral asymmetry in sensitivity was detected.

The subject is very restless during sleep, pitching and tossing about much more than the ordinary. She is not addicted to somnambulism; so far as known, only one experience of this kind has occurred during her life, when she found herself in bed in another room upon waking in the morning. However, most normal people exhibit at least one light experience of somnambulism sometime during their life. She is exceedingly talkative during sleep, but the phenomenon has been decreasing in amount and frequency

during late years. Her talking is partly rational and partly incoherent in nature. Persons have not been able to engage her in conversation at these times because she wakes up immediately when the experiment is attempted. Upon waking she has no memory of her restless movements, her talking, or any somnambulistic events.

Hysterical tendencies are evidenced by an excessive amount of dreaming, often of a frightful character. She maintains that she dreams every night and has done so throughout life as far back as she can remember. She further maintains that she dreams all night long. Upon being questioned upon what grounds she based this contention, she replied that she always woke up out of a long dream, although she was frequently aroused during the night. She cannot remember a case of being immediately conscious of sinking from a waking state into a dream. Her memory of dreams is extremely good. The sensory content used involves every department of sense. She recalled instances with all necessary details, involving olfactory, gustatory, kinaesthetic, contact, warm, cold and painful experiences, as well as the usual visual and auditory types of dream experiences. In the majority of her dreams, her personality is active; she is more or less the center of the plot and drama, all events having a reference to her. She is not a passive spectator, a mere observer. As a consequence, the dream experiences are realistic and dramatic in character and content, and her personality is enhanced in power, importance and self-esteem.

She has been much addicted throughout life to revery, spending all her spare moments in this pastime. This tendency has been accentuated by training and circumstances. She was brought up in early life on fairy stories of all kinds, and has read a great amount of imaginative literature. She lived in isolation from children of her own age and consequently spent a large part of her time by herself. Her social relations were almost exclusively with more mature persons. Her poor health accentuated this isolation. She was thus forced back upon her own inner life for amusement and entertainment. Her reveries are of the fairy story order. They are different from her dreams in the fact that in the

majority of cases her personality is passive. The drama merely unfolds itself to her as a passive spectator; it is impersonal in character, having no logical relation to her personality. It is a vision which she is permitted to see, but which she does not create nor direct, nor in which she has a part. These visionary dramas come so easily, are so varied in content, and rich in detail and plot, that her friends who know her abilities in this line have often urged that she devote her imaginative talents to writing stories for children.

The reveries, nocturnal dreams and the talking during sleep are closely related in memory. The dreams and reveries though generally exhibiting a difference in dramatic content and personal attitude often determine each other in content. During the reveries, she often traces circumstances and details back to some previous dream. Occasionally this backward reference is immediate, a direct memory as it were, rather than an overt act of intellectual recognition. While in the dream state, she has never been immediately aware of the determining influence of previous reveries, though she does trace such causal connection after awakening.

The content of her nocturnal talks often refers to the ordinary events of the day, which her auditors are able to locate and understand. Sometimes they refer to unknown events and, on being informed of their nature after awakening, the subject can trace them back to her previous dreams or reveries. In the same talk, she combines dreams and waking events, or revery and waking events, but she never mixes her dreams and reveries. This latter fact is suggestive in view of the diverse mental attitude exhibited in these two experiences. No memory of her nocturnal talking ever occurred in dreams or reveries, and so far as she knows, these latter were never influenced by the former. The dreams, reveries and talks never had reference directly or indirectly to the trance seizures.

In every-day life she is practical and matter-of-fact; she is not emotional, vivacious or nervous, neither is she slow, phlegmatic or morbid in temperament, but strikes one as being well-balanced, and self-controlled so far as external relations are concerned. She is inclined to be reserved in

social relations, and is extremely reticent in regard to her inner emotional and intellectual life.

Her normal practical self has never been interfered with by the subterranean background of reveries and dreams in the sense that she is ever afflicted with impulsive and uncontrollable ideas, acts or longings which seem to represent forces foreign to her personality.

The fluctuating cutaneous anaesthesia and internal hyperalgesia, the low vitality, the incessant dreaming, the rich imaginative reveries, as well as the seizures are symptoms of a mild case of functional hysteria.

CRITICAL DIGEST

RECENT PROGRESS AND PRESENT TENDENCIES IN COMPARATIVE PSYCHOLOGY [1]

BY ROBERT M. YERKES, HARVARD UNIVERSITY.

More important contributions to our knowledge of comparative psychology, animal behavior, and of certain aspects of the physiology of the nervous system have been made during the past two years than ever before in a like period. And at present there are, on all sides, evidences of deep research impelling, and rapidly increasing interest in the physical and psychical problems of organic development. It is the recognition of these facts that stimulates me to call the attention of psychiatrists and abnormal psychologists to the progress and tendencies in a field of research which is intimately related to their own. I shall not give a *résumé* of all the important articles, monographs, and books on topics of comparative psychology and bordering subjects which have appeared recently, but instead I shall try to indicate by references to a few works those discoveries and tendencies which are of pre-eminent importance for the readers of The Journal of Abnormal Psychology.

1 I use "Comparative Psychology" in this connection in the commonly accepted sense of the psychology of all organisms excepting man. It seems to me desirable, however, that it should designate a method of investigation rather than a division of the field of psychology, and that the expression "Animal Psychology," as contrasted with "Human Psychology" should designate that portion of the materials of the science which is usually known as Comparative Psychology.

For our present purposes, investigations which have directly advanced the science of comparative psychology may be arranged in four groups. 1. Studies of the physiology of the central and the peripheral nervous system, in relation to the behavior of organisms and to consciousness. As representative of this field of research I wish to mention later the work of Sherrington and of Franz. 2. Studies of animal behavior, the goal of which is the accurate and minute description of forms of activity and their explanation in terms of the physiological states and environmental factors which determine them. In this group fall such investigations as those of Jennings and Bohn. 3. Studies of the mental processes of animals, of sensations, ideas, images, memory types, etc. The work of Watson, Porter, Cole, and Berry is indicative of the kind of progress which is being made in this direction. 4. Discussions of the basis of the science of comparative psychology, and of the methods by which it may be developed. Claparède, Washburn, and Yerkes have contributed to the literature of this group. I shall now describe in a very general way the work which has been referred to above as representative.

Sherrington's[1] book on the integrative action of the nervous system is a masterly summing up of the results of years of well-directed and unusually fruitful research concerning the relations of the nervous system to the reflex activities in certain mammals. In it he deals in a most illuminative way with the nature and relations of reflexes in the dog and the monkey, and with the control of activity by the nervous system.

The first two lectures of the volume present with unusual clearness the fundamental facts of neural structure and function which concern the integrative action of the nervous system. Simple and compound reflexes are in turn considered in their relations to the essential portions of the nerve arc: the receptor, the connector, and the effector. As the author is careful to point out, the simple reflex is probably an abstraction, for it always exists in co-ordination with other reflexes. This co-ordination is of two kinds: simultaneous and successive. The former gives origin to what Sherrington calls the reflex-pattern; and the latter to the chain-reflex. By these two different types

1 Sherrington, C. S. The Integrative Action of the Nervous System. New York, Charles Scribner's Sons. 1906. Pp. XVI & 411.

of combination of simple reflexes the various parts of the organism are brought into adjustment to one another and to their environment.

After exhibiting the basis of his classification of reflexes as allied and antagonistic, Sherrington shows how the mutual relations of these two sorts of acts provide us with the varied phenomena of inhibition and reinforcement, which are of such great importance to physicians, and especially to those who deal with nervous derangements.

As it is utterly impossible to summarize Sherrington's volume within the limits of this article, I must content myself with this brief and inadequate description of it, and with the suggestion that it is well worth reading and re-reading.

Through his experimental study of the functions of the cerebrum Franz[1] has recently made a notable contribution to comparative psychology. For he has demonstrated that in monkeys and cats the frontal lobes are concerned in the formation of simple associations. Their destruction causes the loss of recently acquired habits, whereas habits of long standing are retained.

Although the work in the field of sense physiology is obviously important for comparative psychology, I cannot do more than call attention to the fact that practically the same investigation may be conducted from any one of the points of view which we may designate as the physiological, the naturalistic, and the psychological. In studying vision, for example, the physiologist is interested in the functioning of the sense-organ or of the central nervous system; the student of behavior, whom for convenience I have termed the naturalist, is interested in what the animal does when the visual organ is functioning; and finally, the psychologist is interested primarily in the phenomena of visual sensation. These three interests cannot be divorced from one another without loss to science. It is partly in view of this fact that I venture to mention, in connection with this comment upon the progress and tendencies of comparative psychology, work in the physiology of the nervous system and in animal behavior.

We may now turn to the investigations of our second group

[1] Franz, S. I. On the Functions of the Cerebrum: The Frontal Lobes. Archives of Psychology, Vol. 1, 1907. Pp. 64.

and examine the work of Jennings.[1] During the past ten years this indefatigable investigator has published paper after paper on the behavior of the lower organisms, and recently he has brought together under the general title, "Behavior of the Lower Organisms," the chief results of his observation and thought. His book, which is certainly the most important contribution to the study of animal behavior ever published, consists of three parts. The first is descriptive of the forms of behavior and conditions of activity in certain of the unicellular organisms; the second deals similarly with the behavior of certain of the lower metazoa, especially the Coelenterata; and the third presents an analysis of the materials of the first two parts, together with a discussion of the origin of forms of behavior and theories of reaction.

Of prime importance is the fact that Jennings has so thoroughly studied the behavior of many of the lower organisms that he is able to describe their movements accurately and in considerable detail. He has succeeded in analyzing the apparently complex activities of many organisms into their relatively simple components, and he has thus revealed what he calls their action systems. To illustrate, I may quote concerning the action system of Paramecium: "Passing in review the behavior of Paramecium, we find that the animal has a certain set of actions, by some combination of which its behavior under all sorts of conditions is made up. The number of different factors in this set of actions is small, and they are combined into a co-ordinated system, so that we may call the whole set taken together the action system The action-system of Paramecium is based chiefly on the spiral course, with its three factors of forward movement, revolution on the long axis, and swerving toward the aboral side The behavior under most conditions is determined by variations in these three factors. Such variations, combined in typical manner, produce what we have called the avoiding reaction. Other elements in the action-system are the resumption of forward movement, in response to stimulation, and the coming to rest against solid objects in what we have called the positive contact reaction. Subordinate activities, playing little part in the behavior, are the contractions of the ectosarc and the discharge of trichocysts." p. 107.

[1] Jennings, H S. Behavior of the Lower Organisms. New York, The Macmillan Company, 1926. Pp. XIV & 366.

Jennings attention has been devoted chiefly to the investigation of the regulation or adaptation of behavior, and he has sought to discover what principles underlie the phenomena Incidentally he has discovered that even among simple organisms reaction by trial as well as reaction by definite and precise orientation in accordance with the theory of Verworn or of Loeb, occurs. In other words, he has shown that in the lower organisms, as well as in the higher, there are two fundamentally important types of response: reaction by trial, and reaction by a stereotyped and definite reflex. Trial reaction is a form of behavior—possibly I should say the form of behavior — which is usually accepted as an indication of intelligence. But as Jennings shows, if we accept this criterion of consciousness, practically all organisms are conscious.

In an obviously important manner the "Behavior of the Lower Organisms" supplements "The Integrative Action of the Nervous System." The one deals with units of activity and their relations in the case of the lower organisms; the other deals in a comparable way with the simple act of the higher animal, and with those complex relations of reflexes which we know as behavior.

By Bohn[1] and a number of zoölogical psychologists who are associated with him in the "*Institute générale psychologique*" a great deal of extremely interesting and valuable work on the problems of animal behavior and animal consciousness has recently been done in France.

In addition to describing many new forms of animal reaction, Bohn has revealed the fact that the influence of any particular environmental factor upon the behavior of an animal is likely to depend upon the presence and relative intensities of other factors which act simultaneously or successively. For example, the reactions of certain shore animals in response to gravity vary with the condition of the tide even after the animals have been removed to a laboratory aquarium. To Bohn, then, we owe the convincing demonstration of the fact that in order to understand any reaction of an organism, we must know the relations of the various environmental factors which have influ-

1 For a list of the papers of Georges Bohn from 1902 to 1905 see a digest entitled "Georges Bohn's Studies in Animal Behavior." Journal of Comparative Neurology and Psychology, Vol. 16, 1906, pp. 231-238. Many of his more recent papers have appeared in the Bulletin and the Monographs of the *Institute générale psychologique* of Paris.

enced the organism in the past and which are acting upon it at present. In other words, the previous experience of the organism cannot safely be neglected.

The practical importance of such studies of behavior as those of Jennings and of Bohn becomes apparent when we realize that we cannot deal intelligently and successfully with organlisms which further or hinder human life except in the light of knowledge of how they behave, and by what conditions their activities are determined. Given knowledge of the possible activities of the pathogenic bacterium or amoeba, together with similar knowledge of the conditions which modify these activities, we can discover how to control the relations of the injurious organism to our bodies. Jennings has gone a long way toward giving us a practical working knowledge of certain of the lower organisms, but, better still, he has demonstrated the value and applicability of many methods of investigation, and has given an impetus to research in this field which will undoubtedly have far reaching results. It is desirable, however, that the physician should realize the significance for him of the study of organic activity in relation to the control of life phenomena.

We come now to that group of investigations which is strictly speaking psychological. Watson[1] in his monograph on the role of the senses in the reactions of the white rat has presented a thoroughgoing discussion of this subject from the point of view of a rigorous experimentalist. He has clearly demonstrated that the rat needs none of its special senses, except possibly the kinæsthetic or organic, for the learning or the performing of the act of following a complex maze-path. The form of maze which was used is that known as the Hampton Court Maze.

Although it has long been surmised that animals acquire many, if not most, of their motor habits without much aid from sight, hearing, touch, or smell, Watson is the first investigator to prove experimentally that this is true. His work opens up a field of research which heretofore has been approached rather than entered. Undoubtedly we are now on the way to accurate knowledge of the relations of sense data to modifications in behavior.

[1] Watson. J. B. Kinæsthetic and Organic Sensations : their role in the reactions of the white rat to the maze. Psychological Review, Monograph Supplements, Vol. 8, 1907. Pp. VI & 100.

The psychology of the sparrow, in so far as it is known, we must credit to Porter,[1] who, in two papers which to the true naturalist are more intensely interesting than any "nature fakes" or animal stories, has given a vivid description of the psychological characteristics of this common bird. I shall quote a few sentences from the author's summary by way of illustrating his conclusions. "The scope of his [the sparrow's] attention is probably narrow. Any result of his activity which does not follow closely his definitely directed efforts he seems unable to profit by. He has great power of confining his actions to the matter in hand. His persistency is most striking. Most of the birds tried in the complex maze never rested at all after they were once inside. They also returned again and again to make another attempt to enter the food box. These birds both in the laboratory and outside, have shown the wariness which is popularly attributed to them. Those kept in the laboratory for months failed to show signs of becoming tame They test by various cautious means any new and strange object. Their fear is by no means a senseless one Although ideo-motor action plays a rather large role in their movements, they are able to modify their habits readily. They discriminate small differences in the apparatus and adjust their actions accordingly."[2]

The results of Cole's[3] study of the intelligence of the raccoon probably constitute the most important contribution to comparative psychology that has yet been made by a single investigator.

There can be no doubt that Cole was extremely fortunate, so far as psychological results are in question, in his choice of a subject for study, for the raccoon is very intelligent. As the author states, in the rapidity with which it forms associations it stands almost midway between the monkey and the cat, and in the complexity of the associations which it is able to form, it stands nearer the monkey.

Cole has demonstrated the ability of the raccoon to learn by being put through an act, and he has obtained what appears to be excellent evidence of the presence of visual memory. In

[1] Porter, J. P. A preliminary Study of the Psychology of the English Sparrow. American Journal of Psychology, Vol. 15, 1904, pp. 313-346 also, Further Study of the English Sparrow and Other Birds. American Journal of Psychology, Vol. 17, 1906. pp. 248-271

[2] American Journal of Psychology, Vol. 15. p. 346.

[3] Cole, L. W. Concerning the Intelligence of Raccoons. Journal of Comparative Neurology and Psychology, Vol. 17, 1907. pp. 211-261.

view of the results with cats, dogs, and chicks which Thorndike obtained a few years ago, and which since have served to guide comparative psychologists in their estimates of the mental capacities of the higher animals, Cole's results have a value which can scarcely be over-estimated.

Finally, as indicative of the progress in a narrower field of inquiry, I may briefly mention the work of Berry[1] on the imitative tendency of animals.

As the result of careful and long continued observation of white rats and cats under experimental conditions which were especially planned to reveal whatever ability to profit by one another's experience the animals may have, Berry discovered that imitation plays a very important part in the development of activity in these animals. He experimented only with animals which were thoroughly tamed, accustomed to his presence and to the conditions of the experiment, and which were kept in perfect health. Possibly his most important conclusion, in view of what has previously been held concerning the imitative ability of cats, is that these animals exhibit a form of voluntary imitation.

Space-limits prevent the examination of additional contributions to the literature of this relatively new line of experimental research, and we must therefore take up the fourth and last group of contributions to comparative psychology.

Claparède[2] and I[3] have attempted to justify the existence of the science by pointing out that our knowledge of the mental life of other animals is a matter of inference, just as is our knowledge of the states of mind of our fellow men; and I have further argued that inference plays a legitimate part in every science. But after all is said for and against the legitimacy of a science of comparative psychology, or as we might more appropriately call it animal psychology, the real justification of its existence comes from its works. There is to-day a body of facts whose importance cannot be ignored.

[1] Berry, C. S. The Imitative Tendency of White Rats. Journal of Comparative Neurology and Psychology, Vol. 16, 1906, pp. 333-361; also, An Experimental Study of Imitation in Cats. Journal of Comparative Neurology and Psychology. Vol. 18, 1908.

[2] Claparède, E. La psychologie comparée est-elle legitime? Archives de Psychologie, Vol. 5, 1905, p. 35.

[3] Yerkes, R. M. Objective Nomenclature, Comparative Psychology, and Animal Behavior. Journal of Comparative Neurology and Psychology, Vol. 16, 1906, pp. 380-389; also, Animal Psychology and Criteria of the Psychic. Journal of Philosophy, Psychology, and Scientific Methods, Vol. 2, 1905. pp. 141-149.

In a book which she calls "The Animal Mind" Miss Washburn has brought into clear light the chief grounds on which comparative psychology rests, and the materials which at present constitute its right to recognition and pursuit. This book, and my own[2] on "The Dancing Mouse," emphasize aspects of the progress and tendencies of the science, and present critical discussions of methods which should prove useful to investigators

In concluding this sketch of the progress of comparative psychology I may be permitted to point out that we all have to deal in a practical way with the phenomena of behavior. All of our adjustments to society are made on the basis of inferences concerning the meaning of the actions of our fellow-men. It is extremely important, therefore, that we should acquire scientific knowledge of the forms, generic relations, development, modifying conditions, and values of organic activities. The psychiatrist, and, in fact, every physician, is constantly dealing with modes of behavior which he very imperfectly understands. It is the goal of students of animal behavior and of comparative psychology to render our knowledge of organic activity adequate to our needs. In our investigation of what animals feel, think, imagine, remember, no less than of what they do, or of the structure of their bodies, the comparative method is invaluable. If we approach the study of abnormal mental states in man by way of the study of the mental life and types of reaction in other animals we may escape many errors of interpretation and inference and save ourselves innumerable mistakes of action.

[1] Washburn, Margaret F. The Animal Mind: A text book of Comparative Psychology. The Animal Behavior Series, Vol. 2. New York, The Macmillan Company, 1908. Pp. X & 333.

[2] Yerkes, R. M. The Dancing Mouse: A study in Animal Behavior. The Animal Behavior Series, Vol. 1. New York, The Macmillan Company. 1907. Pp. XXI. & 290.

CORRESPONDENCE

EVIL IN MRS. EDDY'S DOCTRINES

In Number 4 of Volume II of this Journal a "prominent neurologist" calls attention to what seems to him, and to many others, a striking inconsistency in the belief of Mrs. Eddy and her followers "in the possibility of a hostile and destructive influence by evil minded persons, even on the minds of true believers." As I feel that the "prominent neurologist" has missed one of the important points of "Christian Science" doctrine, and as there is prevalent amongst medical men a large amount of misconception of this doctrine, I am impelled to make some explanatory remarks on this aspect of Mrs. Eddy's system.

"Christian Science" has two basal theories on which its therapeutic method is supposed to rest. To be sure they are modified versions, in the language of Emmersonian idealism, of the characteristic tenets of the Vedanta system of Indian philosophy, but that is not to the point at present. An intelligent attitude towards Mrs. Eddy's propaganda presupposes an understanding of the use she makes of these two principles.

The first theory is that "All is God," "All is good" and "All is Mind." There is no evil, no suffering, disease, or sin; no matter, physical causation, or physical law. The apparent evil and material causation in the world are simply erroneous beliefs. Hence, the true believer refuses to speak of disease, matter, etc.; but speaks of "beliefs of disease," "beliefs of matter" etc.

But an *erroneous belief* is evil, and hence cannot exist in Mind, *i. e.*, God. Hence the second theory, which supposes *mortal mind*" (no capital), something different from, and antithetical to Divine Mind; and it is this "mortal mind" which is said to be guilty of all those "false beliefs" of sin, disease, material causation, etc. "Mortal mind" is then the principle of evil; really a sort of abstract devil. The question at once arises, how God can be *all*, and yet this "mortal mind" exist. The explicit answer of Mrs. Eddy is that it *doesn't* exist. We have then on the one hand "mortal mind" existing as the sufficient cause of, and medium for, the "errors" or "false beliefs"

which Mrs. Eddy recognizes and which she proposes to cure; and on the other hand, "mortal mind" non-existent, that God may still be "all."

The harmonization of these contradictory principles is of course impossible for the logician, but not for the "christian scientist." The contradiction is only apparent, *i. e.*, is a contradiction for "mortal mind" only, and for the true view there is no contradiction. The trouble with the unbeliever (and the trouble is with him and not with the doctrine), is that he is trying to understand it with "mortal mind," which is by nature the source of error only, and hence incapable of comprehending the truth. The "christian scientist" understands through "Divine Mind." We might say in metaphorical language that "mortal mind" is a useful burden-bearer which, when it gets in the road, considerately swallows itself.

The usefulness of the "mortal mind" concept is enormous, since it not only accounts for its own existence and for the existence of evil, but also for all the inconsistencies with which the "christian scientist" may be charged. It is evident that the person who has once accepted the doctrine cannot be dissuaded by being shown that "christian science" is full of logical contradictions, nor by being shown that he remains alive only by acting constantly in defiance of his belief. All such things are provided for by the doctrine of "mortal mind." Here lies, I am sure, the kernel of the psychological and psychiatrical importance of Mrs. Eddy's religion. The same mental attitude is of course rampant in many other sects, but it is especially accentuated in "christian science."

If we bear in mind the fundamental doctrines of Eddyism, we can see that the belief in malicious witchcraft, *i. e* , mesmerism, is quite to be expected. The active principle in the "christian science" faith is in fact belief in both white magic and black magic. The "practitioner" cures the patient in defiance of the laws of natural causation; that is to say, by white magic. We must remember that the "christian scientist" does not think that his treatment depends on understanding of the principles by the patient, or by any sort of accepted psychological action; for he not only treats *in absentia*, but treats infants and animals. Of course the patient who does accept the religion is more amenable to treatment, for he uses the magic on himself. In short,

it is impossible to class the "christian scientists'" own opinion of their therapeutic method as other than the world-old belief in witchcraft. But if good effects can be produced by the principle of good, evil effects can be produced by the principle of evil (*i. e.*, "mortal mind"). Hence, the well-known doctrine of Mrs. Eddy and her followers that wicked persons can (and do), by the exercise of "malicious mesmerism," injure and even kill true believers, as well as hinder the spread of the faith, is a natural consequence of the leading principles of "christian science," which in this instance is surprisingly consistent.

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BOOKS RECEIVED

THE INTERNAL SECRETIONS AND THE PRINCIPLES OF MEDICINE By Charles E. DeM. Sajous, M.D., Fellow of the College of Physicians of Philadelphia, etc. Volume second. With twenty-five illustrations. Cloth. Pp. xxv, 801-1873. Philadelphia. F. A. Davis Company, Publishers. 1907.

MENTAL PATHOLOGY IN ITS RELATION TO NORMAL PSYCHOLOGY. A Course of Lectures delivered in the University of Leipzig, by Gustav Störring, Dr. Phil. et Med., now Professor of Philosophy in the University of Zürich. Tranlated by Thomas Loveday, M.A., lately Professor of Philosophy in the South African College, Cape Town. Cloth. Pp x, 298. Price $2 75 net. London. Swan Sonnenschein & Co., Ltd. 25 High Street, Bloomsbury, W.C. 1907.

THE SEMI INSANE AND THE SEMI-RESPONSIBLE. (Demifous et Demiresponsables.) By Joseph Grasset, Professor of Clinical Medicine at the University of Montpellier, etc. Authorized American edition translated by Smith Ely Jelliffe, M.D., Ph D., Clinical Professor of Mental Diseases, Fordham University, N. Y., etc. Cloth. Pp. xxxv, 415. Price $2.50 net. New York and London. Funk & Wagnalls Company. 1907.

THE DANCING MOUSE: a Study in Animal Behavior. By Robert M. Yerkes, Ph.D. Cloth. Pp. xxi, 290. Price $1.25 net. New York. Macmillan Company. 1907.